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Fruit Flies of the Ryukyu Islands

TOKUICHI SHIRAKI

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Director, United States National Museum

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Fruit Flies of the Ryukyu Islands (Diptera: Tephritidae)

The present paper deals with the fruit flies of the Ryukyu Islands, including Amami-Oshima Island. It is based mainly upon material that was collected in these areas from December 20, 1952 to May 25, 1953, as part of the Pacific Science Board's Scientific Investigations in the Ryukyu Islands (SIRI) Program. Funds for this undertaking were made available by the U.S. Department of the Army through their contract 49-083 OSA 255 with the National Academy of Sciences for the Board's SIRI Program.

Until the present time, the fruit flies of the Ryukyus (including Amami-Oshima Island) have been known to consist of only seven species. In this study, there are 34 species and one subspecies belonging to six subfamilies of Tephritidae: *Dacinae* (10 sp.), *Trypetinae* (12 sp.), *Aciurinae* (1 sp.), *Tephritinae* (9 sp.), *Euribiinae* (1 sp., 1 subsp.), and *Schistopterinae* (1 sp.). These subfamilies are related to the Formosan ones, but there were no *Oedaspinae* and *Terelliinae*. Few of the species are injurious to agricultural crops, except *Strumeta cucurbitae* and *Tetradacus tsuneonis*, the former attacking cucurbits and the latter citrus. Although *Strumeta dorsalis* is a serious pest of several delicious fruits in the East Subtropical and Tropical Regions, it attacks only the fruits of a few forest trees, mainly of *Garcinia spicata* Hook, in the Ryukyu; however, in one case it has been reared from a tomato at Yogi Agricultural Experiment Station in Okinawa Island. *Paradacus depressus* is a pest of pumpkin or squash in Japan, but in the Amami-Oshima Island its host-plant is still unknown. At present, the host-plants of many other species are quite indistinct.

The writer wishes to express his sincere appreciation and thanks to Dr. S. Kato, chief of the Entomological Section, National Institute of Agricultural Sciences, Tokyo, Japan (NIAS), under whom this work was done, not only for innumerable kindnesses and helpful support but for an academic association that was of inestimable value and inspiration. To Dr. H. J. Coolidge, Executive Director of Pacific Science Board (National Research Council), the author is also deeply grateful and greatly indebted for a kindly, generous interest in the progress of the work.

The following abbreviations are used throughout this paper to designate the depositories of the material examined in this study.

USNM United States National Museum, Washington, D.C.
NIAS Entomological Museum, National Institute of Agricultural Science, Tokyo, Japan
BMH Bernice P. Bishop Museum, Honolulu, Hawaii

Key to the Subfamilies, Genera, Species, and Subspecies of Fruit Flies Collected in the Ryukyu Islands (including Amami-Oshima Is.)

1. Dorsocentral, presutural, sternopleural, and ocellar bristles absent . . . . . Subfamily **Dacinae**: 2
   All bristles noted above always present 8
2. Antennae very elongate; first segment as long as second; abdomen strongly clavate and petiolate, first segment parallel-sided or narrower at apex than at base.
   Genus **Callantra** Walker
   Wings with a large blackish apical spot; mesonotum with one pair of yellowish transverse spots just before the sutures, and one large yellowish triangular postsutural callus . . . . . **Callantra ihai**, new species
   Antennae short, first segment conspicuously shorter than second; abdomen not strongly petiolate, first segment distinctly widened toward apex 3
3. One pair of scutellar bristles 4
   Two pairs of scutellar bristles 6
4. Prescutellar bristles absent, sometimes two anterior supra-alars; wings without supernumerary lobe; abdomen of male with ciliation on third tergum.
   Genus **Tetradacus** Miyake
   Body rather slender, yellowish; abdomen more or less petiolate; wing with a blackish apical spot.
   Tetradacus tsuneonis (Miyake)
   Prescutellar bristles present 5
5. Third abdominal tergum of male ciliate.
   Genus **Strumeta** Walker
   a. Vein m-cu bordered with brown.
   Strumeta cucurbitae (Coquillett)

b. Vein m-cu not bordered with brown, costal band of wing distinct, anal streak distinctly attaining posterior margin.

Strumeta dorsalis okinawana (Shiraki)

c. Vein m-cu not bordered with brown, costal band of wing distinct only at apex, anal streak only along inferior prolongation of anal cell.

Strumeta asatoi, new species

Third abdominal tergum of male not ciliate.

Genus **Gymnodacus** Munro

Very minute ocellar bristles present; wing of male without supernumerary lobe.

Gymnodacus kuniyoshii, new species

6. Presutellar bristles absent. . . Genus **Paradacus** Perkins

Rather large yellowish brown species; wing with distinct costal band, anal streak, apical spot, and a large but faint spot at inferior corner of $1M_1$; male with supernumerary lobe; third abdominal tergum ciliated.

Paradacus depressus (Shiraki)

Presutellar bristles present 7

7. Third abdominal tergum of male ciliate; wing of male with supernumerary lobe . . . Genus **Zeugodacus** Hendel

a. Wing with a blackish spot on r-m.

Zeugodacus ishigakiensis, new species

b. Wing without spot on r-m.

Zeugodacus scutellatus Hendel

Third abdominal tergum of male not ciliate; wing of male without supernumerary lobe.

Genus **Paratridacus** Shiraki

Wing with distinct costal band and anal streak; mesonotum with yellow lateral postsutural calli.

Paratridacus expandens (Walker)

8. Wing conspicuously incised at apex of subcosta, at which point there are strong costal spines; middle of upper surface of disk with blackish or reddish rounded elevations ("bullae"); frons with a pair of strong bristles ("preocellars") in front of ocellars.

Subfamily **Schistopterinae**

Ocellars and preocellars very strong, obtuse, whitish; m strongly undulate, r-m at middle of $1M_2$, m-cu oblique, apical margin of anal cell straight.

Genus **Rhabdochaeta** de Meijere

Two pairs scutellar bristles, the upper two pairs of inferior fronto-orbitals never swordlike; rays of wing pattern simple.

Rhabdochaeta asteria Hendel

Wing not strongly incised at end of subcosta, with only one or two weak costal spines rather similar in size to costal bristles, without "bullae"; frons without preocellars. 9

9. Apical margin of anal cell straight or convex; R_{1+5} not bristled; one or rarely two superior fronto-orbital bristles . . . . . Subfamily **Euribiinae**: 10

Apical margin of anal cell angulate, inferior angle pointed; or more than one pair of superior fronto-orbitals, or R_{1+5} bristled 11

10. Dorsocentrals slightly before level of anterior supra-alars; wing rather narrow and long, not distinctly narrowed at apex; two or more pairs of scutellar bristles; two superior fronto-orbitals . . Genus **Elaphromyia** Bigot

Wing dark brown, posterior border with numerous subhyaline spots.

Elaphromyia incompleta punctata, new subspecies

Dorsocentrals immediately behind suture, far in front of the level of anterior supra-alars; only one pair scutellars; one superior fronto-orbital.

Genus **Actinoptera** Rondani

Basal half of wing hyaline, remainder blackish with hyaline spots; third antennal segment pointed at dorsal apex . . **Actinoptera trypaneoides**, new species

11. Occipital bristles thin, almost black; dorsocentrals always behind suture; mesopleuron with distinct vertical suture before posterior margin; distinctly inferior angle of anal cell produced 18

Occipital bristles thick, obtuse, mostly yellowish, rarely black and pointed; vertical suture of mesopleuron poorly developed; last abdominal tergum of female not shorter than preceding; inferior prolongation of anal cell not developed . . Subfamily **Tephritinae**: 12

12. Head nearly as high as long.

Genus **Ensina** Robineau-Desvoidy

a. Wing almost hyaline, with a few faint bandlike spots . . . . . **Ensina sonchi** (Linné)

b. Wing more or less brownish, with many hyaline spots.

Ensina sororcula (Wiedemann)

Head distinctly higher than long 13

13. Dorsocentrals slightly behind level of anterior supra-alars; proboscis elongate and geniculate.

Genus **Sphenella** Robineau-Desvoidy

Two fronto-orbitals, inner occipital present; frons distinctly pubescent at middle; wing with bandlike pattern . . . . . **Sphenella indica** Schiner

Dorsocentrals slightly behind suture, far ahead of level of anterior supra-alars 14

14. Scutellum almost always with four bristles 15

Scutellum almost always with two bristles, the apical pair wanting 17

15. Three inferior fronto-orbitals . Genus **Protephritis** Shiraki

Frons sparsely pubescent; inner occipitals present; wing rather oval, black, with eleven hyaline marginal spots . . . . . **Protephritis assimilis**, new species

Two inferior fronto-orbitals 16

16. Third antennal segment rounded at apex; frontal and facial orbits broad . . . . . Genus **Euaresta** Loew

Mesonotum and abdominal terga with paired dark spots.

Euaresta punctata, new species

Third antennal segment strongly narrowed at dorsal apex; facial orbits narrow . . . . . Genus **Paroxyna** Hendel

a. Hyaline spots of wing large; mesonotum and abdomen without spots.

Paroxyna iriomotensis, new species

b. Hyaline spots of wing small and well defined; mesonotum and abdomen with small brownish spots . . . . **Paroxyna matsumotoi**, new species

17. Abdomen densely greyish tomentose; wing narrowed apically, with star-shaped apical pattern.

Genus **Trupanea** Guettard

Wing pattern with five rays toward posterior margin, the inner not attaining margin; Cu with a small dark spot at middle.

Trupanea okinawaensis, new species

Abdomen shining black, very slightly tomentose; wing rather broad apically, black with hyaline spots, the basal portion distinctly hyaline.

Genus **Spathulina** Rondani

Wing with eleven hyaline spots along entire margin and two round hyaline spots at middle of disk.

Spathulina acroleuca (Schiner)

18. Mesonotum black; wing with R_{4+5} bare or bristled only at base, with hyaline costal indentations, a few hyaline spots, and rarely a bandlike pattern; abdomen shining, at least apically; dorsocentrals close to level of anterior supra-alars; occipital bristles thin and black, or yellowish and thick . . . . . Subfamily **Aciurinae**

Pterostigma very short; anal cell shorter than basal cell, inferior angle pointed but not produced; outer verticals very short; postverticals short, thick, yellowish or black; fronto-orbitals 1:3; one pair of scutellars.

Genus **Oxyaciura** Hendel

Frons very sparsely pubescent, two pairs of yellowish occipital bristles, third antennal segment elongate; wing black, R_1 with two large costal hyaline indentations, posterior margin with four hyaline indentations, two small hyaline spots at middle of disk . . . . . **Oxyaciura formosae** Hendel

Mesonotum yellow, sometimes with black marking; R_{4+5} bare or bristled; inferior angle of anal cell moderately produced; wing with bandlike pattern to completely hyaline, rarely with many hyaline spots, no more than one distinct costal indentation; last abdominal tergum of female always shorter than preceding . . . . . Subfamily **Trypetinae: 19**

19. Scutellum with four bristles 20

Scutellum with six bristles; prothorax bristled; arista plumose; pterostigma very long, nearly as long as second costal cell; R_{2+3} very slightly undulate; r-m distinctly beyond middle of $1M_2$, straight and perpendicular . . . . . Genus **Acanthoneura** Macquart

Frons pubescent on anterior half; ocellar bristles very weak; one or two pairs of fronto-orbitals; inner occipital bristles present but very fine; wing with a very large costal indentation immediately beyond pterostigma, the posterior marginal portion broadly hyaline, two small round hyaline spots on disk.

Acanthoneura amamioshimaensis, new species

20. Prothorax without bristles 21

Prothorax with yellowish bristles 26

21. Wing broad with black streaks near base; arista pubescent but not plumose; r-m just beyond middle of $1M_2$.

Genus **Paratrirhithrum** Shiraki

Shining black; frons dirty yellow with a broad brownish median transverse band; fronto-orbital bristles 2:2; postverticals far apart; occipital bristles well developed, especially the inner pair long; ocellar triangle with a pair of fine bristles immediately behind normal strong ocellar bristles; wing with three broad rays from the pterostigma.

Paratrirhithrum amamioshimaensis, new species

Wing without black streaks near base 22

22. Arista plumose 23

Arista pubescent, never plumose 24

23. Third antennal segment rounded at apex; wing with radiate pattern; almost always yellowish.

Genus **Taeniostola** Bezzi

Large, light yellow; frons parallel-sided; fronto-orbital bristles 2:3 or more; inner occipital bristles present, but conspicuously shorter than postverticals. Mesonotum with a pair of black sublateral streaks and three black spots along posterior margin; wing with a broad costal band and three transverse rays, median ray not connected to costal band.

Taeniostola tripunctata, new species

Third antennal segment pointed at apex; wing with banded pattern . . . . . Genus **Acrotaeniostola** Hendel

Blackish; frons yellowish or reddish brown; fronto-orbital bristles 2:3; inner occipital bristles present, nearly as long as postverticals; dorsal margin of third antennal segment undulate; two genal bristles . . . **Acrotaeniostola antennata**, new species

24. Vein m-cu not strongly oblique, almost always perpendicular to m 25

Vein m-cu strongly oblique, never perpendicular to m; R_{2+3} almost straight . . Genus **Phagocarpus** Rondani

a. Occipital bristles absent; only apical half of arista pubescent; wing with brownish black, semicircular apical streak distinctly separated from basal patch.

Phagocarpus okinawaensis, new species

b. Inner occipital bristles present; arista pubescent throughout; wing with four rays from basal patch, the apical arcuate one not connected to basal patch.

Phagocarpus amamioshimaensis, new species

25. R_{2+3} undulate . . . . . Genus **Hendelina** Hardy

a. Second costal cell entirely hyaline; subapical band between wing apex and m-cu not connected to apical band . . . **Hendelina fossata** (Fabricius)

b. Second costal cell uniformly brown; subapical band connected to apical band.

Hendelina superflucta (Enderlein)

c. Second costal cell blackish with a large hyaline quadrate spot; no subapical band between wing apex and m-cu.

Hendelina nigrescens, new species

R_{2+3} quite straight . . . Genus **Chenacidiella**, new genus

Brown; wings brown with three large hyaline costal spots, a broad posterior hyaline margin, a hyaline spot at posterior apex of R_5, and irregular hyaline spots basally. Fronto-orbital bristles 2:2; ocellar bristles rather weak, parallel; inner occipital bristles present, nearly half as long as postverticles; dorsocentrals slightly behind level of anterior supra-alars, sometimes a pair of long bristles situated lateral of the dorsocentrals and posterior to prescutellars and nearly as long as latter . . . **Chenacidiella purpureiseta** (Chen)

26. Head comparatively short, nearly two-thirds as long as high; r-m parallel with m-cu.

Genus **Carpophthoracidia**, new genus

Shining brownish; frons light orange yellow; fronto-orbitals 1:3; inner occipital bristles present; wing with a broad blackish costal band and two radiate bands . **Carpophthoracidia matsumotoi**, new species

Head higher than long; r-m distinctly convergent with m-cu.

Genus **Acidiella** Hendel

Shining light castaneous; frons reddish yellow; fronto-orbital bristles 1:3; inner occipital bristles present; wing brownish black, base and anal lobe entirely hyaline, two large hyaline costal indentations and three large ones on posterior margin.

Acidiella okinawaensis, new species

Subfamily Dacinae

Genus *Callantra* Walker

Callantra Walker, 1859b, p. 153.
Mellesis Bezzi, 1916, p. 114.

Callantra ihai, new species

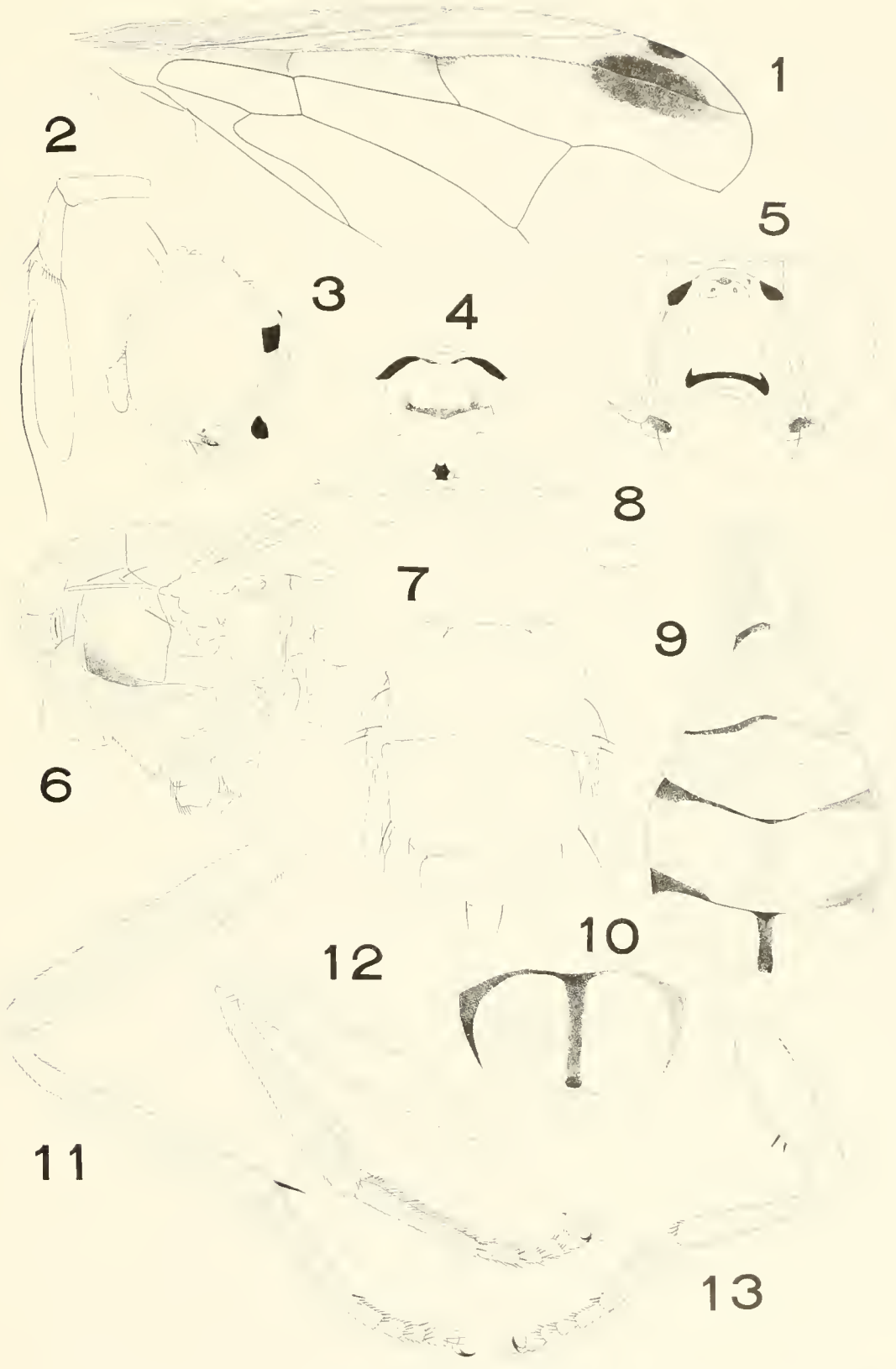
Plate 1

Female. Head nearly as wide as mesonotum, narrower than twice the length, about as long as high. Frons (pl. 1, fig. 4) flat, ochraceous, with the anterior fronto-orbital borders whitish yellow, a black semicircular spot on the anterior corners of eyes between the frons and face, and a dark transversal stripe on the middle triangularly produced below at the lateral ends; vertical calli faintly defined, rather broad, shining yellow; fronto-orbitals very narrow, light reddish yellow, shining; lunule not shining, with a pair of small blackish spots; ocellar triangle small, black, three yellowish ocelli placed on its corners. Face (pl. 1, fig. 5) yellow, with a distinct black lower margin, moderately swollen; the orbits rather narrow, light yellowish brown, same width throughout; parafacials about twice as wide as the orbit, slightly paler than the latter; antennal grooves rather distinct, slightly broadened below, brownish; epistoma very narrow, light yellowish brown; cheeks rather narrow, but with a distinct genal groove, more or less darkened at about the middle. Back of head (pl. 1, fig. 3) light yellowish brown, with the eye-margins and occiput yellow. Antennae (pl. 1, fig. 2) reddish yellow, long and slender; first segment cylindrical, slightly thickened apically; second segment as long as the first, somewhat flattened and distinctly broadened apically, with some weak apical bristles and a rather strong median bristle; third segment darkened apically, longer than the two basal segments together, about 5 times as long as wide, rather pointed; arista somewhat longer than the third segment, black with the thick base light yellow. Proboscis dirty yellow, rather small, furnished with some black, weak, but rather long bristly hairs; palpi (pl. 1, fig. 8) very small, with round apex. Bristles of the head weak, black; two pairs of vertical and genal rather strong; two pairs of inferior fronto-orbitals and only one pair superiors very weak; occipital row hardly traceable; others wanting.

Mesonotum (pl. 1, fig. 7) (except the scutellum) about as long as wide, reddish brown, covered with a short golden-yellow pubescence, with the humeral, the transverse-oblong presutural and the triangular median postsutural calli distinctly yellowish, lateral postsutural calli lacking; scutellum shorter than the basal width, yellow, somewhat brownish about the basal corners, covered with short orange-yellow pubescence. Pleura (pl. 1, fig. 6) colored like the notum, but blackish about the portion below the mesopleural spot, with yellow meso- and metapleural spots, the latter nearly quadrate. Bristles of the thorax black, the humerals, outer scapulars, anterior supra-alars and the sternopleurals lacking.

Abdomen (pl. 1, figs. 9, 10) distinctly longer than the head and thorax together, distinctly petiolate, reddish brown, obscured by a short golden-yellow pubescence, strongly hollowed beneath; first tergum distinctly narrower than the scutellum, moderately narrowed apically, furnish with long pale hairs along the lateral borders, about twice as long as wide; second tergum somewhat triangular, broadened posteriorly, the anterior border brownish black, an ill-defined whitish-yellow triangular band along the posterior margin; third tergum shortest, wider than twice the length, distinctly narrowed laterally, reddish brown, with one pair of small yellow median spots which are somewhat rounded, a narrow unbroken brownish black band along the anterior margin; fourth tergum broadest, wider than twice the length, light reddish brown, with a pair of very large rounded yellow spots about the middle, along each of the anterior and posterior margins a very narrow brownish-black band broadened laterally, the posterior one being widely interrupted in the middle; fifth width of tergite somewhat less than twice the length, or nearly as long as the second tergite, yellow, with a narrow brownish-black basal band and a median longitudinal stripe, the former broadened toward the sides and the latter entire throughout length, the so-called shining patches reddish brown and subquadrate. Abdominal sternites very small, brownish, the posterior borders blackish; the last segment (basal segment of ovipositor) somewhat cylindrical, darkened laterally, about twice as wide as long, or nearly as long as the preceding sternite, which is the largest. Second segment of ovipositor rather narrow and cylindrical but distinctly narrowed apically, about as long as basal segment; the following segment (third segment of ovipositor) style-like, with the apex needle-like.

Wings moderate in size, very slightly yellowish, with the basal third of radial, medial, and anal cells and allulae distinctly colorless; the costal border between the costa and R_{1+5} yellow, the pterostigma orange yellow near the faintly smoked apex there is a dark ill-defined spot and on the base of r-m a very small smoked spot, below the Rs somewhat smoked, the anal cell distinctly yellowish, its apical prolongation very narrow, more than 1½ times as long as the proper cell; veins almost all brown, the costa hardly extending below the end of media. R_1 furnished with very minute bristles, R_{4+5} (except the apical third) distinctly bristled, a few bris-



***Callantra ihai*, new species, female**

1, Right wing; 2, left antenna; 3, head, profile; 4, head, from above; 5, head, from front; 6, thorax, side view; 7, thorax, from above; 8, left palpus; 9, abdomen, from above; 10, last abdominal tergum; 11, right midleg; 12, right hindleg; 13, right front leg.

tles directed forwards. Halteres whitish, with the base brownish and the head very slightly yellowish.

Legs moderate in size, yellowish, covered with pale short hairs, possessing two black claws. Front legs (pl. 1, fig. 13) shortest; femora reddish yellow, with two blunt black spines on the two-thirds of the underside and one or two long bristly hairs near apex of upper surface; tibiae distinctly shorter than femora, about the apical margin some yellowish-brown short bristles; tarsi nearly as long as femora, the first segment as long as the following ones together, paler, the underside furnished with rather long pale bristly hairs, remaining segments somewhat brownish, each segment furnished with some black bristles at the apices. Midlegs (pl. 1, fig. 11) longest, slender; femora longer than the hind femora, reddish yellow except basal portion, a few long hairs about the basal half ventrally; tibiae light reddish yellow, much shorter than the femora, with a distinct black apical spur; tarsi whitish, distinctly shorter than the tibiae, or as long as the hind tarsi, the first segment somewhat longer than the following together, ventrally with whitish blunt bristly hairs and a black apical bristle, the 2d to 5th segments somewhat brownish, some black blunt short bristly hairs ventrally, especially at the apices. Hindlegs (pl. 1, fig. 12) distinctly longer than the front ones; femora longest, slender, reddish yellow excepting the base, along the inner ventral margin some hairs which become longer apically; tibiae yellowish brown, distinctly shorter than the femora, some yellowish bristles at inferior apex; tarsi whitish yellow, the apical four segments brownish, the first segment as long as the following together, each segment furnished with some black short blunt bristles about the inferior apex and with whitish blunt bristly hairs ventrally, the hairs on the first segment long and conspicuous.

Length: Body 10 mm, wing 7.5 mm.

Holotype.—Female, Asahikawa, near Nago, Okinawa Is., Dec. 14, 1953, collected by Mr. K. Iha (NIAS). Somewhat allied to *Mellesis apicalis* Shiraki from Formosa, but it is distinctly different in many characters.

Genus *Tetradacus* Miyake

Dacus (*Tetradacus*) Miyake, 1919, p. 92.—Shiraki, 1933, pp. 35, 113 (as subgenus).

Tetradacus tsuneonis (Miyake)

Plates 2, 3

Dacus fenestratus Kuwana (not Fabricius), 1911a, p. 23; 1911b, p. 109.

Dacus (*Tetradacus*) *tsuneonis* Miyake, 1919, p. 92, pl. 2, fig. 1, pl. 10, fig. 1.

Tetradacus tsuneonis (Miyake).—Shiraki, 1933, p. 113.

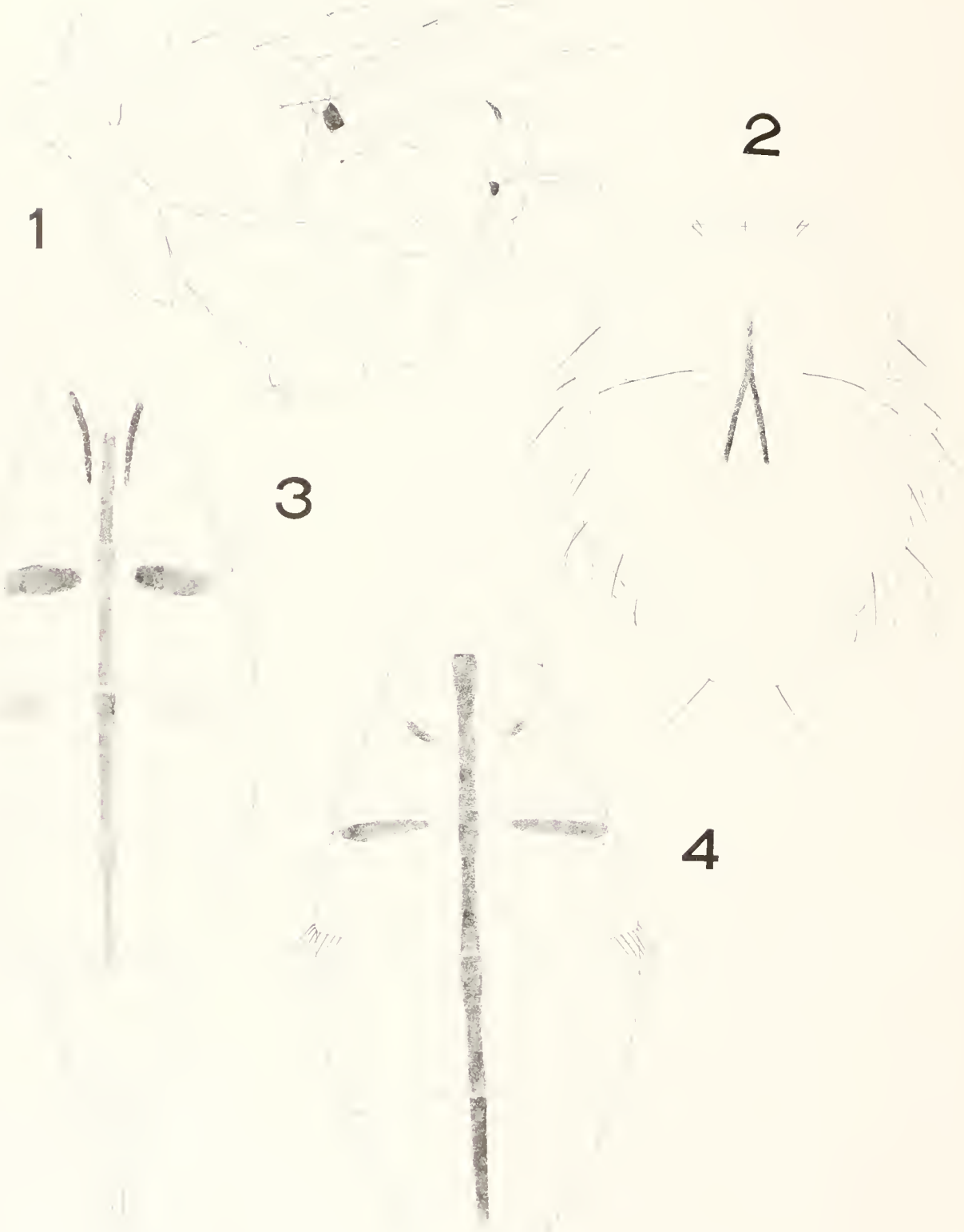
A large, dirty orange-yellow species, distinguished by the long abdomen with a narrow black median longitudinal streak from base to apex, the broad yellowish costal band of wing which has no supernumeral lobe in male, and the bottle-shaped ovipositor.

Male.—Head about as wide as the thorax, higher than long, about 2/3 as long as wide. Frons (pl. 2, fig. 9) broad, distinctly but slightly widened anteriorly, broader than eye, the anterior half conspicuously elevated, with narrow shining orbits and short, shining vertical calli, orange yellow, with a pair of ill-defined brownish median spots and two pairs of brownish lateral spots, some short erect yellowish setae about the large median portion; ocellar triangle small, black; lunule quite swollen, waxy yellowish brown; vertex with one transverse straight carina just behind the ocellar spot. Face (pl. 2, fig. 8) broad, comparatively long, nearly straight in profile, the lower portion of the middle area distinctly transversely rugulose, with relatively broad parafacialia, their inner margins conspicuously carinated and somewhat brownish tinged, waxy orange yellow, with a fine blackish line along the inferior margin of each antennal fovea and one pair of black oblong lateral spots which are placed on the inner sides of antennal grooves and hardly attain the mouth-edge; epistoma with a minute black median spot, the lateral mouth borders brownish. Back of the head (pl. 2, fig. 10) conspicuously convex, light yellow; cheeks high, with a distinct but rather small subtriangular black spot just below lower angle of eye, genal groove shallow but rather distinct. All bristles black, rather weak: fronto-orbitals 1:2; ocellar and postverticals not developed; occipital row very weak; genal very short. Antennae (pl. 2, fig. 6) brownish yellow, comparatively long and narrow, distinctly longer than the face; first segment very slightly thickened apically, nearly as long as the apical width; second segment distinctly widened toward the apex, relatively long, nearly half as long as the third segment, without distinct median bristle, the dorsal margin furnished with some fine bristly hairs, the ventral apex with a few brown bristly hairs; third segment 2/9 as wide as long, nearly the same width throughout with the apex rounded; arista blackish brown with the basal fourth yellowish, quite bare. Palpi (pl. 2, fig. 7) rather large, broadest about the middle, apex round, the dorsal margin slightly and the ventral margin strongly curved, nearly 2/5 as wide as long, yellowish; proboscis rather small, brownish.

Thorax reddish brown, oval in shape, a little shorter than the abdomen. Mesonotum (pl. 3, fig. 2) moderately convex, with two greyish tomentose median longitudinal streaks, between which is a narrow blackish median stripe, the latter bifurcate in its posterior half

***Tetradacus tsuneonis* (Miyake), male**

1, right wing; 2, right hindleg; 3, right foreleg; 4, right midleg; 5, interno-apical portion of left hind tibia; 6, left antenna; 7, left palpus; 8, head, from front; 9, head, from above; 10, head, in profile.



Tetradacus tsuneonis (Miyake)

Male: 1, thorax, from side; 2, thorax, from above; 4, abdomen, from above. Female: 3, abdomen, from above.

along the yellow median postsutural callus; humeral calli, one rather narrow longitudinal spot just behind the humeral callus, the strongly curved narrow lateral postsutural calli and the lanceolate median postsutural callus, yellow, without the yellow presutural calli; notopleural areas and just above the wingbases, waxy brownish; nearly the entire surface covered with short somewhat dense yellow pubescence. Scutellum comparatively small, yellowish. Pleura (pl. 3, fig. 1) slightly paler and less pubescent than the notum, yellow, with large mesopleural, sternopleural, and metapleural spots. All the bristles black, rather weak: scapulars distinct, the median pair rather close together, the outer stronger, in the specimen examined there is another one just behind the normal bristles; only one anterior supra-alar (two in Japanese specimens, but many examples from Kyushu possess only one), posteriors two; notopleurals 1:1; dorsocentrals and prescutellars not developed; scutellars only one pair; mesopleural and pteropleural bristles distinct, but the latter smaller, no sternopleural.

Abdomen (pl. 3, fig. 4) yellow pubescent, relatively narrow, not broader than the thorax, oblong, somewhat paler than the latter, with one distinct narrow black median longitudinal streak which extends from the base of second tergum to just before the apex, the first to fifth terga each with an ill-defined shallow depression near the latero-apical corners, also broadly carinated at the lateral margins excepting the last tergum; second tergum a little longer than the following one, with a pair of submedian oblique brown spots; third tergum with a blackish narrow basal transverse band broadly interrupted in the middle, bristles of the ciliation rather weak and comparatively fewer than any other Ryukyu *Dacinae;* fifth tergum with a longitudinal furrow between the so-called shining spots, which are brown and less pubescent than the remaining portion; venter more reddish than the dorsum, the pleural membranes longitudinally rugulose; genitalia small, blackish.

Wings (pl. 2, fig. 1) more or less greyish with M glass-hyaline, normal in shape, R_{4+5} nearly straight and bristled on the basal two-thirds, m-cu moderately sinuate, r-m slightly curved, the prolongation of anal cell as long as the apical section of anal vein, without the supernumerary lobe; pterostigma and ill-defined apical spot dark brown, this color connecting with a very narrow dark brown stripe along the costal margin of R_1; C, R_1 and R_2 yellow, the anal streak and large border of Cu yellowish grey, R below the radial sector greyish.

Legs brownish yellow, with three or four apical tarsal segments brown. Front legs (pl. 2, fig. 3) conspicuously shorter than the midleg; femora almost evenly pubescent, but externo-apicoventral margin furnished with very few fine bristles; tibia slightly shorter than femur, covered with a brownish pubescence; tarsi slightly shorter than tibia, the first segment longer than the four apical segments together, half as long as the tibia, yellowish pubescent, ventral surface furnished with yellowish bristly hairs, remaining segments furnished with a few black bristles about the apex of each segment. Midlegs (pl. 2, fig. 4) longest, pubescent, bristling similar to that of foreleg; tibiae very slightly shorter than femur, with two black apical spurs, one nearly half as long as the other; tarsi conspicuously shorter than the tibia, the first segment distinctly shorter than half as long as the tibia or nearly as long as the four apical segments together. Hindlegs (pl. 2, fig. 2) distinctly shorter than midleg, but pubescence similar to latter; tibiae conspicuously shorter than femur, at the ventral apex there are two minute black bristles, one nearly half as long as other, no brush-patch on the interno-apical portion, but there are five distinct transverse sulci (pl. 2, fig. 5), furnished with the usual hairs.

Female.—Quite similar to male (pl. 3, fig. 3); palpi more curved, relatively larger than in male; transverse sulci of hind tibiae less distinct; median longitudinal streak extending from the first through entire fifth terga, lateral pattern of abdomen as in the figure. Ovipositor light castaneous brown; the first segment bottle-shaped and yellowish pubescent, with the narrowed apical portion somewhat transversely rugulose, nearly as long as the fourth and fifth abdominal terga together; second segment with a pair of distinct longitudinal sulci.

Length: Body 12 mm (male) to 12.5 mm (female with ovipositor), wing (male and female) 10 mm.

Material examined.—The present description is based on only two specimens from Amami-Oshima Island, collected by Mr. S. Sato, July 1952.

Remarks.—The author has found a difference on the important character of this genus (anterior supra-alar bristles two), that the specimens from Amami-Oshima Island and many ones from Kyushu have only one anterior supra-alar bristle, while the examples from Kyushu possessing two anterior supra-alar bristles are rather rare.

Genus *Gymnodacus* Munro

Gymnodacus Munro, 1938b, p. 117.

Gymnodacus kuniyoshii, new species

Plate 1

Male.—Head longer than half the width, 1½ times as wide as high. Frons (pl. 4, fig. 3) narrow, parallel-

sided, 2½ times as long as wide, approximately ¼ as wide as head, yellow, with an ill-defined, somewhat quadrate median spot on the posterior half between the two inferior fronto-orbital bristles, the narrow posterior margin of lunule, and a transverse band on the vertex including the black ocellar triangle, reddish brown; vertical calli faint, covered with a sparse yellow pubescence; the fronto-orbitals with a very short brownish pubescence, the posterior portion being slightly reddish brown. Face (pl. 4, fig. 2) a little shorter than the width, rather strongly widening below, pale yellow, with two pairs of black spots, of which the upper one is a minute dot and the lower one oblong and placed on the inner side of antennal groove; epistoma with three blackish spots, the median one being very minute and the lateral ones ill defined but moderately large; antennal grooves whitish, very minute black setae on lower portions; eye-margins well defined, very narrow; in profile moderately swollen just above the middle, shallowly hollowed anteriorly and the lower half to the upper mouth-edge almost straight. Back of head (pl. 4, fig. 4) moderately convex, yellow with a large median portion black, some pale hairs on lower portion, near the occipital foramen there is a row of black short setae; cheeks rather narrow, somewhat brownish below the lower corner of eye, a few black short bristly hairs along lower margin. Antennae (pl. 4, fig. 12) yellowish brown, with the two basal segments paler; second segment with some pale bristly hairs near the lower angle, a few black short ones near the apical margin of outside. Some black setae along upper margin, a distinct median bristle and a conspicuous basal bristle; third segment approximately 2½ times as long as the second, nearly 3½ times as long as wide, with apex rounded; arista black, the basal third yellowish. Palpi (pl. 4, fig. 5) yellow, rather broad, distinctly curved upward and gradually widened towards the rather oblique apex, nearly twice as long as wide, the lower marginal area furnished with some brown bristly hairs, very few setae about the middle on upper margin. All bristles blackish brown; fronto-orbital 1 : 2, rather short, the upper inferior being placed halfway between superior and lower inferior; ocellars minute; inner verticals nearly parallel, somewhat stronger than the outers; genal rather conspicuous; occipital row consisting of only five short bristles, rather widely placed; postvertical wanted.

Mesonotum (pl. 4, fig. 7) black, covered with a greyish tomentum and black or yellowish setae, the former forming five very broad longitudinal stripes, of which the median occurs only behind the suture and is a long triangle in form, the outer pair interrupted at the suture, the submedian pair not attaining both margins; humeral notopleural, and lateral postsutural calli conspicuously straw yellow; setae black about the anterior half, yellowish on the posterior half, but black about the lateral borders, very pale on the calli. Scutellum entirely yellow, covered with pale setae; mesophragma and postnotum black, the latter somewhat reddish, greyish tomentose. Pleura (pl. 4, fig. 6) black, foreborder between the front coxae and the humeral calli brownish, possessing conspicuous straw colored spots as follows: one large spot covering the entire posterior half of the mesopleuron and in reality a continuation of the elongated spot immediately in front of the suture; one small transverse oblong spot on the upper end of the sternopleuron, and one large spot on the metapleuron, as well as the space just below the latter spot. All the bristles blackish brown; notopleural 2, rather strong but short; supra-alar 1 : 2, the anterior weak and short, the first posterior strong and longer than any others, the second at nearly the same level as the prescutellars; humeral wanting; one pair of scutellars; mesopleural 1, pteropleural very weak.

Abdomen (pl. 4, fig. 8) a little longer than the thorax, yellowish brown, with three black transverse bands and one concolorous median longitudinal stripe, the first band being broadest and situated on the anterior 2/3 of first tergum, the second at the middle of the second tergum, the third on the anterior border of the third tergum, all these bands being united at the lateral margins; the median stripe from the third band extending nearly to apex; two apical terga with black lateral stripes but not attaining apex; third tergum black with one pair of yellow spots on posterior half, no ciliation on posterior margin; the so-called shining spots on apical tergum subquadrate, somewhat brownish, densely covered with very minute brown pubescence. Underside pale yellowish with a rather broad blackish median longitudinal stripe which is distinct only on the two apical sterna, the anterior median portion somewhat reddish. Abdominal pubescence yellowish.

Wings (pl. 4, fig. 1) without the supernumerary lobe, R_{4+5} with one row of distinct rather sparse and reclinate bristles distributed from base to middle of last section of the vein; anal cell rather short and nearly as long as the apical sections of the anal vein, the apical prolongation as long as the cell proper. Blackish costal band entire, nearly the same width throughout; anal cell rather faintly brownish. Halteres whitish.

Legs yellowish white, tibiae and subapical spot of femora blackish brown, apical three segments of tarsi somewhat brownish. Front legs (pl. 4, fig. 11): femora with an ill-defined brownish spot on outside about the middle of the posterior half, dorsal margin with a blackish pubescence, of which approximately five near

Gymnodacus kuniyoshii, new species, male

1, right wing; 2, head, from front; 3, head, from above; 4, head, profile; 5, right palpus; 6, thorax, side; 7, thorax, from above; 8, abdomen, from above; 9, right hindleg; 10, left midleg; 11, right foreleg; 12, right antenna.

the apex are long and thick and bristle-like, ventral margin with paler sparse long hairs, of which the median five are very long and nearly colorless; tibiae distinctly shorter than the femora, densely furnished with black setae, somewhat long and thick toward the apex; tarsi slightly longer than the tibiae, a few bristly hairs on dorsal surface of each segment, the ventral side of the first segment with dense pale bristles, some black short blunt bristles at the apical portions of remaining segments. Midlegs (pl. 4, fig. 10): femora a little longer than tibiae; an ill-defined large blackish-brown patch externally at about middle of apical half, dorsal apex blackish, pubescence rather sparse and short; tibiae densely covered with short black pubescence, apical spur approximately 1/4 as long as first tarsal segment, two distinct bristles in addition to the spur; tarsi shorter than tibiae, the first segment longer than the four following together, whitish, the pubescence similar to that of front tarsi. Hindlegs (pl. 4, fig. 9) somewhat shorter than midlegs; femora distinctly longer than tibia, an ill-defined blackish patch near apex, the apical third of dorsum somewhat brownish, with some long whitish hairs; four blackish short bristly hairs along externoventral margin of apex, the remaining pubescence almost whitish; tibiae with a dense black pubescence becoming longer on ventral side and also at apex, "brush-patch" wanting; tarsi nearly as long as tibiae, the first segment distinctly longer than the remaining segments together, the whitish bristly hairs on underside rather long and remaining pubescence yellowish, the four apical segments with black pubescence on the upper surface and whitish on the lower surface, with some black bristles in addition.

Length: Body 6 mm, wing 4.2 mm.

Types. Holotype, ♂ (NIAS); paratype, ♂ (NIAS); both collected by Mr. S. Kuniyoshi, at Funauki, Iriomote Is., Jan. 8, 1953.

Remarks. This species is somewhat allied to *Strumeta dorsalis* Hendel, but is distinctly different in the wings lacking the supernumerary lobe, the third abdominal tergum lacking the marginal ciliation, the black pattern of abdomen, the very short anal cell of wings, the blackish tibiae, and many others.

Genus *Paradacus* Perkins

Paradacus Perkins, 1938, p. 113.

Paradacus depressus (Shiraki)

Plate 5

Zeugodacus depressus Shiraki, 1933, p. 90; fig. 24; pl. 2, fig. 5.

A large brownish species allied to *Paradacus caudatus* Fabricius.

Male. Head rather small. Frons (pl. 5, fig. 3) broad, as wide as eye, very slightly broadened anteriorly, nearly 7/8 times as wide as long, yellowish brown with an ill-defined brown median spot, the space between this spot and occipital margin hardly hollowed, mat yellowish except the somewhat waxy colored vertical calli and the narrow median pale longitudinal stripe; ocellar triangle very small and black; lunule very narrow, shining brown. Face (pl. 5, fig. 4) broad, twice as broad as high but conspicuously narrowed upwards, middle callus in profile very slightly elevated, somewhat hollowed below, then distinctly produced to the upper mouth-edge, shining pale yellowish, with a pair of black lateral spots which reach narrowly almost to the oral margin, orbits rather narrow; cheeks 1/5 as high as eye-height, with very indistinct genal groove, with yellowish short pubescence on the lower portion; back of head (pl. 5, fig. 2) quite convex, rather shining yellow, an ill-defined brown patch about the middle of upper portion, lower portion somewhat pubescent. Antennae (pl. 5, fig. 8) distinctly longer than face, yellow, lower margin of third segment somewhat brownish; third segment nearly 1/7 as wide as long, very slightly narrowed toward the round apex, $2\frac{2}{3}$ times as long as the second; arista black with yellowish base. Palpi (pl. 5, fig. 9) dirty yellow, broad, apex somewhat quadrate, about twice as long as wide. All bristles black: superior fronto-orbital 1, with a black small spot at base, inferiors 3, of which the lower two are placed close together, the lowest very short, the upper inserted on a blackish spot; inner verticals longest, parallel, outer vertical a little shorter than inner, strongly divergent; genal somewhat weaker than superior fronto-orbital; bristles of occipital row very irregular, very short.

Mesonotum (pl. 5, fig. 6) black, covered with yellowish minute pubescence, a rather broad median longitudinal streak (triangularly broadened at the posterior one-third), borders of transverse sutures, inner marginal areas of humeral calli, and lateral borders, reddish yellow; humeral, rather narrow lateral and short median postsutural, and notopleural calli, shining dirty yellow; the median reddish-yellow longitudinal streak with a reddish-brown median longitudinal line which is divided into two along the outer margins of median postsutural callus; a pair of non-obscured black longitudinal streaks on the black portions from near the middle of inside of humeral calli to near the lateral bases of scutellum through the inner ends of transverse sutures; along the inner margins of lateral postsutural calli a pair of narrow non-obscured black streaks. Scutellum yellowish brown, apical margin somewhat brown, covered with a yellowish pubescence. Pleura (pl. 5, fig. 5) black,

Paradacus depressus (Shiraki)

Male: 1, right wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, thorax, from side; 6, thorax, from above; 7, abdomen, from above; 8, left antenna; 9, left palpus; 10, right foreleg; 11, right midleg; 12, right hindleg; 13, right tibia, interno-apical portion. Female: 14, abdomen, from above.

propleuron and mesopleural, sternopleural and metapleural spots, yellowish. All bristles black: scapular two pairs, of which the outer is longer than inner; humeral 1, weak, paler; notopleural 2, distinct; supraalar 3, two of which are posterior; scutellar two pairs, the apical pair distinctly longer than the basal; mesopleural 1, sternopleural and pteropleural wanting.

Abdomen (pl. 5, fig. 7) a little longer and broader than the thorax, reddish brown, obscured by a yellowish pubescence; second tergum broadest and longest, fifth tergum as long as the second; second tergum with a narrow short black transverse band near anterior margin, lateral margins narrowly black; third tergum with a black anterior marginal band; fourth and fifth terga with black lateral transverse spots along anterior margins; the black narrow median longitudinal streak from anterior margin of third tergum to posterior margin of fifth tergum interrupted at the posterior one-third of third tergum; bristles of ciliation of third tergum blackish brown; underside yellowish, with the last three sterna blackish; genitalia small, blackish with yellowish claspers.

Wings (pl. 5, fig. 1) comparatively large, somewhat triangular, anal lobe relatively narrow, supernumerary lobe rather small; R_{4+5} slightly undulate, bristled from base to apical one-fourth, bristles on apical portion rather sparse and directed anteriorly; prolongation of anal cell very long and slender, conspicuously longer than the cell proper; pterostigma and R_1 blackish brown, this color extending to middle of mouth of R_5 along the costa, forming a costal band which is conspicuously widened at tip so that it forms a distinct round apical spot; anal streak moderate in width and very distinct, nearly reaching the wing-margin; posterior corner of $1M_2$ infuscated; R_3 somewhat yellowish along the R_{2+3}.

Legs light yellow, coxae, trochanters, and tibiae of hindlegs somewhat blackish brown; apical segments of tarsi slightly brownish; spur of the midtibiae and claws blackish. Front legs (pl. 5, fig. 10) conspicuously shorter than midleg; femora slightly shorter than tibia, dorsal surface with some long black fine bristly hairs, ventral surface with yellowish hairs; tibiae distinctly thickened toward apex, covered with yellowish hairs which on inner surface are very short; tarsi about as long as tibia, the first segment as long as the four following segments together, the internoventral surface with yellowish bristly hairs, the four apical segments with black hairs on the dorso-apical portion. Midlegs (pl. 5, fig. 11) as long as hind pair; femora as long as the tibia, covered with a yellowish pubescence which becomes somewhat longer on the ventral surface; tibiae distinctly longer than tarsus, covered with yellowish pubescence, apical spur as long as width of apex; tarsi rather slender, the first segment longer than the four following segments together. Hindlegs (pl. 5, fig. 12) rather slender; femora distinctly longer than tibia, with long brown bristly hairs on about apical half of dorsal surface and with yellowish rather sparse hairs on ventral surface; tibiae conspicuously narrow at basal one-fourth, brownish pubescent, brush-patch near apex of internodorsal surface distinct but rather small; tarsi very slightly shorter than tibia, yellowish pubescent, dorsal surface of the apical segments with some black hairs, the first segment distinctly longer than the following segments together.

Length: Body 10 mm, wing 9.5 mm.

Female.—Similar to male, but black portions of body sometimes smaller; inferior fronto-orbital bristles sometimes four, of which lower three are placed closely together; the supernumerary lobe of wings not developed, prolongation of anal cell nearly as long as the cell proper; bristle-ciliation of third tergite never developed; ovipositor with a long flat (sometimes somewhat cylindrical) basal segment which is longer than the two last abdominal terga, yellowish brown.

Length: Body (without ovipositor) 11–12 mm, wing 8–9.5 mm.

Material examined.—One male and four females collected by the author, at Yuwan in Amami-Oshima Is., May 1953; one female, by Mr. T. Edashige, at Shin-Mura, Amami-Oshima Is.

Remarks.—This species is injuring the squashes in Japan and Formosa. In the Amami-Oshima Island it is found in the mountainous district where there are no Cucurbitaceae.

Genus *Paratridacus* Shiraki

Paratridacus Shiraki, 1933, *vol. 8*, p. 109.

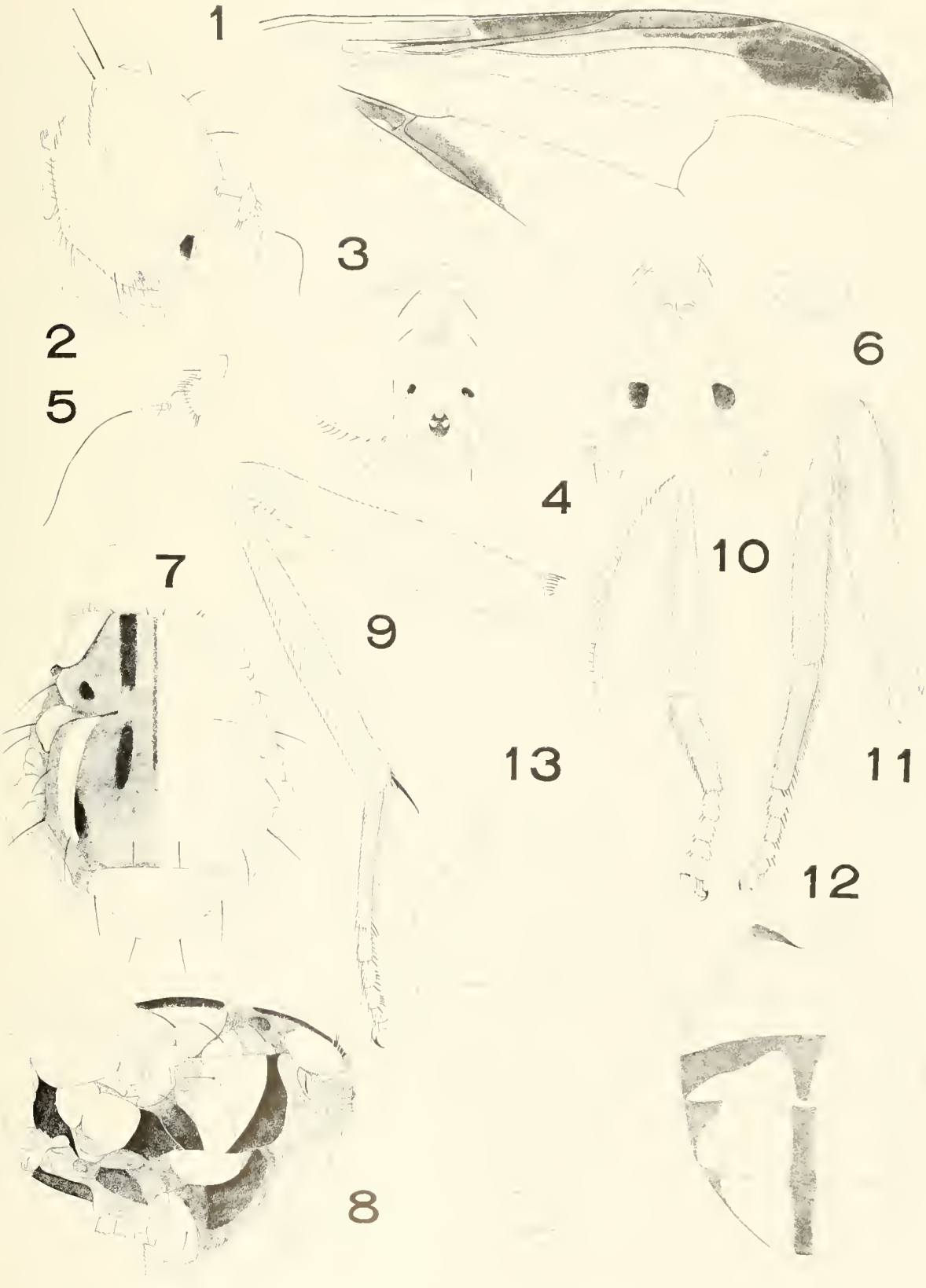
Paratridacus expandens (Walker)

Plate 6

Dacus expandens Walker, 1859a, p. 114.
Bactrocera garciniae Bezzi, 1913, p. 97.
Dacus yayeyamanus Matsumura, 1916, p. 412; pl. 23, fig. 10.
Paratridacus yayeyamanus (Matsumura).—Shiraki, 1933, p. 110; fig. 29.; pl. 3, fig. 4.

A rather large, brownish species.

Male.—Head a little longer than half the width, or about 1.3 times as high as long. Frons (pl. 6, fig. 3) dirty yellowish, comparatively narrow, narrower than eye width, very slightly broadened anteriorly with straight lateral margins, hardly concave, anterior half somewhat elevated, covered with rather sparse very minute brown setae which are somewhat conspicuous



Paratridacus expandens (Walker)

Male: 1, right wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, left antenna; 6, left palpus; 7, thorax, from above; 8, thorax, from side; 9, right midleg; 10, right foreleg; 11, right hindleg; 12, abdomen, from above. Female: 13, abdomen, from above.

and black just below the middle, where there is an irregular-shaped, rhombic or quadrate (small to large), brown to black spot; eye-margins very narrow, somewhat elevated, more or less shining; vertical calli rather ill-defined flat, shining with two or three rows of black minute setae; ocellar triangle rather distinct and black, about 1/4 as wide as vertex; lunule distinct, with a longitudinal median sulcus, shining, brown to brownish black. Face (pl. 6, fig. 4) dull waxy yellow, tinged near inferior corners; in profile (pl. 6, fig. 2) below antennal roots there is a small, flat median elevation, somewhat hollowed below, then somewhat produced forward at epistoma. Back of head (pl. 6, fig. 2) moderately swollen, upper portion somewhat hollowed, pale brownish yellow, the orbital borders pale yellow. All bristles black, weak except vertical bristles, which are rather strong, the inner pair longer than outer; ocellar bristles very minute; inferior frontoorbitals two pairs, their roots being black but sometimes not tinged, superior one pair which stand on apex of vertical calli, distinctly black around their roots, and the inferiors are two pairs, the distance between the upper pair of inferiors and the superior is almost always a little greater than that between the two inferiors, but in some cases equidistant; genal bristle conspicuous. Antennae (pl. 6, fig. 5) a little longer than face, brownish yellow with third segment brown to blackish brown, base yellowish; first segment longer than wide, cylindrical, slightly thickened apically; second segment about 1.5 times as long as the preceding, distinctly broadened apically, with a conspicuous black median bristle. Some black bristly hairs along the apical margin; third segment 2.5 times as long as second, laterally compressed toward apex, nearly parallel-sided with round apex; arista near base, quite bare, black with three basal segments yellowish. Palpi (pl. 6, fig. 6) pale yellow, rather short and broad, broadest just before middle, the upper margin slightly concave, gradually narrowed toward rounded apex, sparsely pubescent over entire surface; proboscis comparatively short, brown to blackish brown.

Mesonotum (pl. 6, fig. 7) distinctly narrower than head at anterior margin and broadened posteriorly, broadest a little before the scutellum, reddish brown to brown, mostly greyish tomentose and yellowish-brown pubescent, with a pair of blackish, nearly straight, rather narrow, submedian longitudinal streaks from near the interno-anterior corners of humeral calli to middle of the metazona thr ugh the inner ends of transverse sutures, sometimes interrupted at the sutures, between those two streaks a very fine blackish or brownish stripe from anterior margin to basal third of metazona; black sublateral longitudinal streaks from hind margins of humeral calli to near the basal corners of scutellum along the inner sides of the lateral postsutural calli, those streaks almost always ill defined and often broadly interrupted about the sutures, sometimes appearing only as two spots, one on the middle portion of the prozona and other on the posterior portion of the metazona; humeral, notopleural, and lateral postsutural calli yellowish white, the latter being rather narrow. Scutellum moderate in size, about half as long as wide, whitish yellow with the large median portion waxy white. Pleura (pl. 6, fig. 8) mostly black, the propleuron and many sutural areas reddish brown, whitish tomentose except the whitish yellow, meso-, sterno- and metapleural spots, the latter distinctly divided into two (metanotal and metapleural); mesophragma black with a pale reddish-brown median longitudinal streak extending through the black metanotum. All bristles black; scapulars 2, notopleurals 2, supra-alars 3 (one anterior, two posterior), prescutellars one pair, scutellars two pairs, mesopleural 1, pteropleural 1.

Abdomen (pl. 6, fig. 12) nearly as wide as thorax, reddish yellow, yellow pubescent; first tergum strongly narrowed at base, with rather broad blackish lateral margins and one small brown longitudinal median spot, the latter often wanting; second tergum also with rather narrow blackish lateral margins; at basal border one, rarely three, small, ill-defined brownish or blackish spots which are sometimes united with the median spot of preceding tergum; third to fifth terga each with one pair of triangular black lateral spots and one median longitudinal streak of similar color, the latter sometimes interrupted at the suture between the third and fourth terga, the lateral spots on the third tergum sometimes extending to median streak on the basal margin; ciliation of bristles of the third tergum in male never developed. Ventral surface yellowish, sterna castaneous to blackish, posterior margin of each sternum often very narrowly yellowish.

Wing (pl. 6, fig. 1) moderate in size, gradually narrowed toward apex, very slightly smoked but M quite clear; costal and anal bands blackish, the former in the second costal cell paler toward base, first costal cell hyaline, not broadened to R_{4+5}; apical blackish spot occupying about antero-apical half of R_5, united with costal band above; anal streak not extending to wing margin and not broadened below anal vein; supernumerary lobe and the black shaggy hairs never developed. The vein R_1 bristled throughout; R_{4+5} distinctly bristled except apical one-third; r-m oblique and somewhat undulate, placed distad of the middle of $1M_2$; m-cu somewhat S-like; prolongation of anal cell a little longer than the cell proper.

Legs rather bright yellow, comparatively short. Front legs (pl. 6, fig. 10) shortest; femora distinctly but gradually narrowed toward apex and rather suddenly narrowed at the basal one-third, with a small ill-defined brownish to blackish externo-inferior oblong spot before apex, many but sparse black bristly hairs throughout on dorsal surface; tibia distinctly shorter than femur, relatively narrow, the basal half narrowed toward base, some blunt yellowish-brown bristly hairs at ventral apex, similar but shorter ones standing brushlike along the interno-apical margin, the surface covered with short blackish pubescence which becomes a little longer on the dorsal surface and paler on the interior surface; tarsus slightly shorter than tibia, comparatively broad, the four apical segments darker, the first segment nearly as long as the following segments together, the pubescence on the ventral surface yellowish, blunt, brushlike, becoming longer toward base, intermixed with a few black ones, pubescence on dorsal surface and at apex mostly black, the fourth segment shortest. Midlegs (pl. 6, fig. 9) longer than other legs; femora slightly broadened at about middle, apical half of externoventral surface black, pubescence yellowish, a few scattered, longer hairs on ventral surface; tibia as long as femur, straight, basal third narrowed toward the base, the black apical spur as long as apical width, a few short bristles around the spur, pubescence mostly blackish; tarsus about 2/3 as long as tibia, rather slender, the first segment whitish, slender, much longer than the four following segments together, covered with yellowish pubescence, setae on the ventral surface blunt and brushlike, long but gradually shortened apically, with some black setae about the apex, the four apical segments mostly black pubescent. Hindleg (pl. 6, fig. 11) with blackish-brown coxa and trochanter; femur very slightly curved, somewhat narrowed toward base and apex, with a distinct blackish ill-defined preapical spot on the ventral surface before the apex, the pubescence mostly yellowish and on the dorsal surface of apical half conspicuously long and rather sparse; tibia distinctly shorter than femur, distinctly narrowed at about the basal one-fourth, brownish pubescent, apical third or half brownish; tarsus a little shorter than tibia, the first segment whitish, distinctly longer than the four following segments together, with a yellowish pubescence on the ventral surface as on first tarsal segment of midlegs, but more sparse, the four apical segments somewhat brownish and mostly black pubescent, ventral surface furnished with a few blunt black bristles.

Length: Body 6.5–9 mm, wings 5.5–8.5 mm.

Female.—Quite similar to the male (pl. 6, fig. 13). Ovipositor very short, reddish yellow or yellowish brown, the basal segment conspicuously depressed, nearly as long as the fifth abdominal tergum but when seen from the dorsum distinctly shorter, yellowish pubescent; the shining spots on fifth abdominal tergum larger but inconspicuous.

Length: Body 6.2–9.3 mm (without ovipositor), wings 5.5–8 mm.

Remarks.—Many males and females collected in Iriomote and Ishigaki Islands, from December 31, to February 23, 1953, on the leaves of *Calophyllum inophyllum*, *Garcinia spicata*, *Ficus fachikoogi*, and *Glehnia littoralis*, and also a few in Miyako (one male and one female, in March) and Okinawa (one male, March 27) Islands; observed that the females oviposit in the fruits of *Garcinia spicata*.

Genus *Zeugodacus* Hendel

Dacus (*Zeugodacus*) Hendel, 1927, pp. 25, 26 (as subgenus).

Zeugodacus scutellatus (Hendel)

Plate 7

Dacus scutellatus Hendel, 1912a, p. 20, pl. 1, fig. 4.
Dacus trivittatus Walker.—Matsumura, 1916, p. 411, pl. 23, fig. 9.
Dacus bezzii Miyake, 1919, p. 146, pl. 2, fig. 2, pl. 10, fig. 2.
Zeugodacus scutellatus (Hendel).—Shiraki, 1933, pp. 79, 82.

A small to medium-sized, blackish species; distinguished by the four black transversal bands on the abdominal tergites, the three pairs of subequidistant brown to black lateral spots on the frons, the oblong black brush-patch on the apico-internal surface of the hind tibiae, the three narrow yellowish postsutural calli, and the conspicuous black apical spot of the scutellum.

Male. Head distinctly narrower than thorax, 1 to 1.7 times as long as wide or a little higher than long. Frons (pl. 7, fig. 3) distinctly narrower than eye, very slightly widened forward, with straight lateral margins, nearly flat, lemon yellow to dirty yellow, with three pairs of brownish to blackish lateral spots, of which the middle pair is distinctly nearer to the upper than to the lower pair, rather large brownish to blackish subquadrate spot, distinctly blackish pubescent in the middle; in some specimens frons nearly uniformly colored, without spots; lunule narrow and small, shining black to castaneous brown; vertex with one pair of black or dark brown oblique-transverse lateral spots and the rather small black ocellar triangle, the former is sometimes connected with the ocellar spot; vertical calli more or less distinct, but rather small, shining. Face (pl. 7, fig. 4) distinctly shorter than wide, with straight lateral margins, light waxy yellow, with a pair of rather small, round, black lateral spots not

Zeugodacus scutellatus (Hendel)

Male: 1, left wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, thorax, from above; 6, thorax, from side; 7, abdomen, from above; 8, right antenna; 9, right palpus; 10, right foreleg; 11, right midleg; 12, right hindleg; 13, left hind tibia, internal-apical portion. Female: 14, abdomen, from above.

reaching the oral margin, externo-inferior margins of antennal fossae black; orbits narrow but distinct, lightly covered with a greyish tomentum, in profile slightly hollowed about the middle and conspicuously produced toward the upper mouth-edge. Back of head (pl. 7, fig. 2) moderately convex, light waxy yellow, largely somewhat brownish around occipital foramen; cheeks short and narrow, with rather shallow genal groove, sometimes with an inconspicuous brown spot just below lower angle of eye. All bristles black, rather strong, the ocellars and postverticals very weak; lower inferior fronto-orbital bristles composed of two or rarely three bristles, placed closely; genal weak, about as long as the postvertical. Antennae (pl. 7, fig. 8) moderate in length, light reddish yellow, with two basal segments paler; first segment as long as wide; just behind upper apical margin almost always a small ill-defined blackish dot with seven or more black short bristles along dorso-apical margin; second segment longer than 1/3 the third one, somewhat blackish toward the dorso-external apex, with a strong black median bristle which is a little longer than the segment, the remaining apical marginal bristles yellowish and rather weak; third segment nearly four times as long as wide, very slightly narrowed toward the evenly rounded apex, with a blackish, bare arista which has a rather long yellow basal segment. Palpi (pl. 7, fig. 9) comparatively large, about 2.5 times as long as wide, basal third narrowed and moderately bent, apex evenly slightly rounded.

Thorax rounded, narrowed toward the straight anterior margin. Mesonotum (pl. 7, fig. 5) black, with the wing-bases brownish, the humeral, notopleural, very small presutural, lateral postsutural, and comparatively narrow median postsutural calli, light yellow; surface obscured by a greyish tomentum and a light yellow pubescence, with the exception of three narrow nontomentose longitudinal stripes, of which the median one is finer and hardly extends to the streaks bordering the median yellow postsutural callus, the latter being usually narrower than the lateral calli and not reaching the posterior margin of the disk; the submedian lateral nontomentose stripes interrupted at the suture and distinctly widened toward the inner margins of humeral calli, but when seen from the side they are of nearly the same width throughout their length; yellow lateral postsutural stripes hardly attaining the scutellum, nontomentose along both sides; humeral calli rather large, about twice as long as wide or longer than half the anterior margin of the disk as seen from above; nontopleural calli small but conspicuously elevated; presutural calli very small and narrow. Scutellum evenly rounded apically, light yellow, with a rather large black apical spot. Pleura (pl. 7, fig. 6) black, the anterior portion usually reddish brown or sometimes yellowish brown, often brownish black or rarely yellowish brown behind the yellow mesopleural spot, reddish brown above the midleg; yellowish sternopleural spot almost always small but distinct, while the yellow metapleural spot is large; mesophragma black or brownish black. All bristles black, moderate in length, the humeral very fine and outer scapular sometimes wanting; pteropleural distinct, but sternopleural wanting; two pairs scutellars, the apical somewhat stronger than the basal and almost always slightly directed inward.

Abdomen (pl. 7, fig. 7) yellow to orange yellow, obscured by whitish pubescence; first tergum blackish at the anterior and lateral borders, often with an ill-defined blackish triangular spot on the middle, or sometimes entirely black; the lateral hairs moderately long and more or less brownish; second to fifth terga each with a black basal band, the first not reaching to the lateral margins and sometimes narrowed or broadened about the middle, the second produced into a short triangular median projection, the third with a similar but narrower and longer median posterior projection not reaching the hind margin, often interrupted in the middle, usually very broad; fifth tergum with a narrow black median longitudinal streak hardly extending to the posterior margin, the shining patches reddish brown to brownish black, rather large, traverse oblong; the bristles of the third tergum black, moderate in length. Sterna almost all shining black, often the middle one or two reddish brown; the lateral membranes orange yellow; genitalia almost always blackish to black.

Wing (pl. 7, fig. 1) rather broad with the large supernumerary lobe in which there are a few black shaggy hairs; R_{4+5} very slightly undulate at the apical half, distinctly bristled from the base to near the apex, sometimes two rows of bristles near the middle; r-m straight or sometimes slightly bent near posterior end; prolongation of anal cell comparatively short, nearly as long as cell proper; pterostigma and R_1 brown to blackish brown, this color extending to before the middle of the mouth of R_5 along the wing margin and moderately widened in R_3 and R_{4+5}, so that the rather narrow costal band has a small apical spot; m-cu very slightly sinuate, bordered with a brown tint, this color being conspicuously widened posteriorly and narrowed anteriorly and often interrupted before the middle; anal stripe brown to blackish brown, rather broad, somewhat paler at each end; anal lobe rather broad and short. Halteres rather small, light yellow.

Legs light yellow to yellow, with coxae and trochanters of two posterior pairs blackish brown. Front legs (pl. 7, fig. 10) conspicuously shorter than others; femur distinctly longer than tibia, nearly 1/5 as wide as long, the dorsal and ventral surfaces more or less brownish, some sparse blackish bristly hairs along the dorsal margin, yellowish, longer but finer bristly hairs along ventral margin; tibia shorter than tarsus, with a whitish pubescence, usually gradually thickened apically; the first tarsal segment as long as the following together, bristles on internoventral surface yellowish and rather long, the four apical segments more or less brownish, with a few long brown hairs on dorsal surface, the claws rather large, black with the base light yellow. Midleg (pl. 7, fig. 11) conspicuously longer than the hindleg; femur as long as tibia, with a whitish pubescence, a few long hairs on ventral margin; tibia with a whitish pubescence, and with a black apical spur which is rather weak; tarsus comparatively short, about 2/3 as long as the tibia, the first segment a little longer than the following together, furnished with short yellowish bristles on ventral surface, the four apical segments very slightly brownish, a few brown hairs on dorsal surface, a few short black apical bristles, the claws black with the basal half yellowish. Hindleg (pl. 7, fig. 12): femur distinctly longer than tibia, very slightly sinuate, very often more or less brownish, with the apex irregularly brown to blackish, some long, sparse pale hairs on dorso-apical third and rather long and equidistantly arranged whitish hairs on ventral margin; tibia a little longer than the tarsus, the basal and apical (except the ventral side) third brown to blackish brown, rather uniformly pubescent, the brush-patch of the inner surface relatively large, occupying nearly whole apical one-third, but the bristles very short; tarsi rather slender, the first segment about half as long as the tibia or conspicuously longer than the following together, bristles of ventral surface comparatively long.

Length: Body 6–8 mm, wings 6–8 mm.

Female. Quite similar to the male. Wings without the supernumerary lobe, with the anal lobe relatively long; the third abdominal tergum without bristles; 6th tergum developed but very short, yellowish with a short and narrow black longitudinal median stripe; ovipositor rather depressed, basal segment longer than the fifth and sixth terga united together, castaneous brown to blackish brown; hind tibiae without the brush-patch on the inner surface, but its portion is very slightly granulated.

Length: Body (with ovipositor) 8–9.2 mm, wings 6–7 mm.

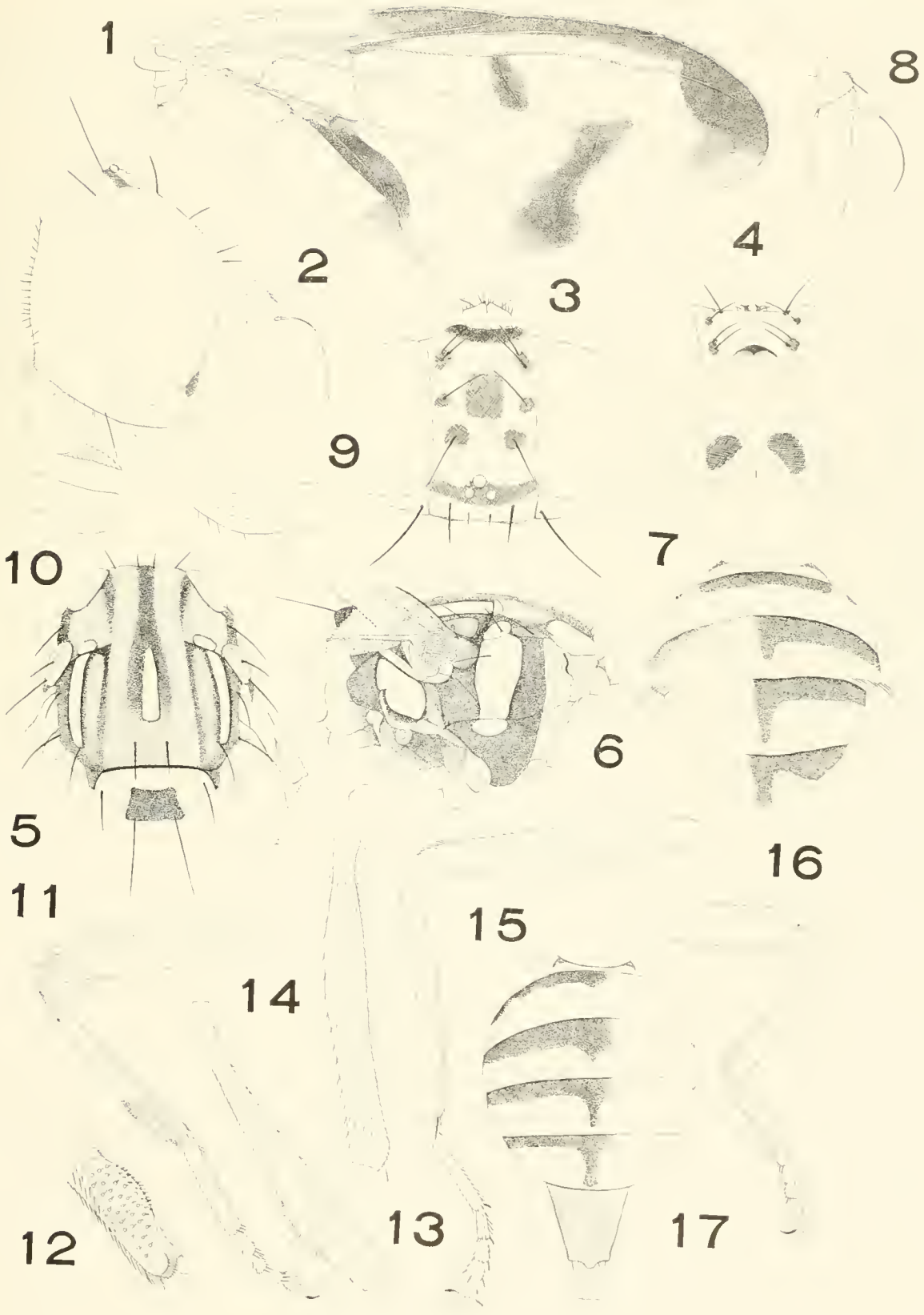
Material examined.—Eight females and 58 males collected by the author in Miyako, Okinawa, and Amami-Oshima Is., from March 9, to May 16, 1953. Two males have been reared from one male-fruit of *Cucurbita moschata* at Naha, Okinawa Island.

Zeugodacus ishigakiensis, new species

Plate 8

This species is very near *Zeugodacus nigrifacies* Shiraki from Formosa, but easily distinguished from it by the yellowish face, femora, and abdomen, the conspicuous brush-patch of hind tibia, and many other characters.

Male. Head distinctly narrower than the mesonotum, light reddish yellow. Frons (pl. 8, fig. 3) nearly 1/3 as wide as head, hardly broadened forward, whole surface almost obscured by a whitish tomentum, posterior half with a very sparse white pubescence, anterior half with brown pubescence on the blackish median spot; white short setae along eye-margins, three pairs of lateral spots, one large quadrate median spot and a blackish vertical transverse band, the posterior pair of lateral spots subtriangular; lunule shining black. Face (pl. 8, fig. 4) shining, with one pair of rather large black lateral spots which hardly attain mouth-edge; orbits moderate in width, well defined with reddish-brown margin, very slightly widened below, obscured by a greyish tomentum; in profile a very small median callus hardly traceable, distinctly but shallowly hollowed just below this, then nearly straight to the upper mouth-edge. Back of head (pl. 8, fig. 2) moderately convex, shining brownish, with eye margins yellowish, a row of yellowish-brown bristly hairs near lateral borders of occipital foramen; cheeks rather narrow, yellowish, pale hairs along lower margin, of which some are brown, genal groove hardly traceable. All bristles black, rather strong; ocellars very small, divergent; three pairs inferior fronto-orbitals, the anterior two standing very close together on an anterior lateral spot; genal distinct; occipital row very weak. Antennae (pl. 8, fig. 8) yellowish brown; the first segment moderately widened apically, whitish yellow, with black bristly hairs on dorsal apex; second segment distinctly longer than preceding, dull colored, with a long black median bristle surrounded by some short blackish setae at dorsal apex, and some blackish setae at ventral apex; third segment approximately 3.5 as long as second, broadest at basal third, with round apex; arista black, with basal segment light yellow. Palpi (pl. 8, fig. 9) light yellow, comparatively large, long, moderately broadened toward the slightly rounded apex, a few setae on ventral margin of basal half.



Zeugodacus ishigakiensis, new species

Male: 1, right wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, thorax, from above; 6, thorax, from side; 7, abdomen, from above; 8, right antenna; 9, right palpus; 11, right hindleg; 12, right hind tibia, interno-apical portion; 13, hind tibia, external side; 15, right midleg; 16, right foreleg. Female: 10, right palpus; 14, hind tibia external side; 17, abdomen, from above.

Mesonotum (pl. 8, fig. 5) rather rounded, black, obscured by a greyish tomentum, leaving three longitudinal streaks and narrow marginal borders on the yellowish callosities, covered with a yellowish pubescence; humeral and notopleural calli light yellow, more or less shining; postsutural calli narrow, dull yellow, the median one short, pointed anteriorly and somewhat truncated posteriorly, the lateral pair connected with very small and rather inconspicuous presutural calli and hardly extending to the posterolateral margins. Scutellum light yellow, covered with a light yellow pubescence, with a large black apical spot and a very narrow black basal transverse band. Pleura (pl. 8, fig. 6) black, the anterior border and below wing-bases reddish brown, with two shining light yellow, comparatively narrow spots on meso- and metapleura, the anterior one connecting with a similar colored oblong basal spot of the sternopleuron; mesophragma black. All bristles black; scutellar two pairs; humeral near the posterior corner, developed but very minute, brownish; pteropleural distinctly developed; scapular short.

Abdomen (pl. 8, fig. 7) comparatively small, reddish yellow, with a black basal band on each tergum, on the second tergum it is interrupted near the lateral margins, and on the remaining terga connected with a black median longitudinal streak, the streak not reaching to the posterior margin of each tergum but hardly extending to the posterior margin on the fifth; the third tergum with blackish-brown bristles; the fifth tergum with one pair of brown transverse oblong shining spots.

Wings (pl. 8, fig. 1) large, with conspicuous supernumerary lobe, R_{4+5} distinctly bristled from the base to before tip, hyaline with blackish-brown pattern as follows: costal band nearly the same width throughout, becoming paler on its posterior half apical spot extending to m; anal streak extending narrowly to the corner of supernumerary lobe, and occupying apical portion of anal cell, where it has a straight inner margin right-angled to the anal vein; median spot on r-m conspicuous; subapical streak on m-cu irregular in shape, extending from R_5 to the wing margin. Pterostigma distinctly longer than the second costal cell, blackish brown; prolongation of anal cell very long, longer than the cell proper, some black shaggy hairs on externo-anterior border of cu.

Legs light yellow, rather long and slender. Front legs (pl. 8, fig. 16) comparatively small; femur rather thick, with a small elongate blackish subapical spot on external surface, with yellowish setae becoming distinctly longer on the dorsal border and ventral margin, intermixed with some black ones; tibia as long as femur, with blackish pubescence, mostly yellowish on apical half, apical brushlike setae yellowish brown; tarsi as long as the tibia, the first segment as long as the following together, yellowish pubescent, rather sparse yellowish bristles on ventral surface, with black apical spinelike bristles, the remaining segments with black setae which become yellowish brown on the ventral border, the apical segment slightly brownish. Midlegs (pl. 8, fig. 15) conspicuously long and slender, with coxa and trochanter somewhat dark colored; femur nearly straight and very slightly narrowed apically, the pubescence mainly whitish yellow intermixed with numerous black on apical one-third, becoming denser on dorsal border, a few long white hairs on apical one-third of dorsal margin and on basal half of ventral margin; tibia a little shorter than femur, distinctly but slightly curved, with a whitish-yellow pubescence intermixed with very short black hairs, apical spur comparatively small and black; in addition, three yellowish-brown short spinelike bristles on each side along apical margin; tarsi distinctly shorter than tibia, pubescent as in front tarsus, apical segment slightly brownish. Hindlegs (pl. 8, fig. 11) very slightly shorter than the midlegs; coxae and trochanters black, whitish pubescent; femur curved, with dorsal apex blackish brown, the pubescence yellowish white basally, black on the apical blackish portion, on dorsal sparse, long, erect, yellowish-white hairs border apical half; tibia a little shorter than the femur, the basal and apical one-third blackish brown, light yellowish-brown pubescence, yellowish-white setae on apical two-thirds of ventral border, a well-defined blackish brush-patch on apical one-third of inside; tarsi distinctly shorter than tibia, conspicuously paler, first segment nearly half as long as tibia, pubescent and bristled as in the front tarsus, apical segments more or less brownish

Length: Body 7 mm, wing 7 mm.

Female.—Palpi rather short, distinctly broadened at about the middle; dark portion of legs darker than in the male, the hind tibiae almost entirely blackish brown, the latter broadened at about the middle and without the brush-patch; abdomen without the bristles of the third tergum; ovipositor moderate in length, the basal segment shining black and furnished with a short pale pubescence, the second segment shining reddish brown.

Length: Body (with ovipositor) 8 mm, wing 6.8 mm.

Types. Holotype, ♂, USNM 69373, Jan. 23, 1953; paratypes, 14 ♂, 4♀, Jan. 23–Feb. 24; all from Ishigaki Is. (NIAS).

Remarks.—In this species there is little variation, the size varies from 6.5 to 8 mm in body length and from 6.5 to 7.5 mm in wing length.

Genus *Strumeta* Walker

Strumeta Walker, 1856, p. 33.
Chaetodacus Bezzi, 1913, p. 93.

Strumeta dorsalis okinawana (Shiraki)

Plate 9 (figs. 1–16)

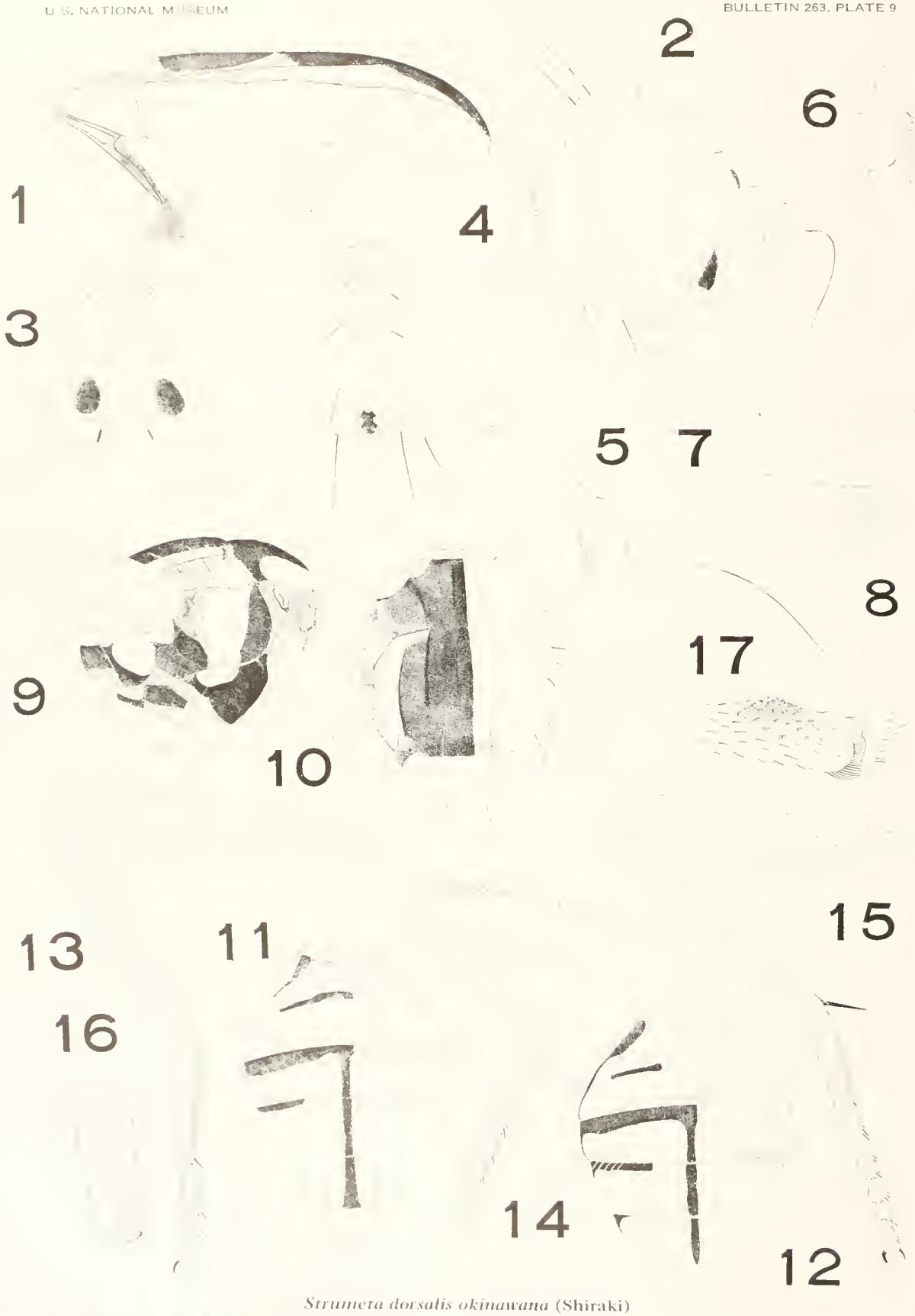
Chaetodacus ferrugineus var. *okinawanus* Shiraki, 1933, p. 62, fig. 18; pl. 1, fig. 5.

Male.—Head whitish yellow to yellow, nearly as wide as mesonotum, about two-thirds as long as wide, about 1⅙ times as high as long. Frons (pl. 9, fig. 4) light yellow to dirty yellow, moderately covered with a white tomentum and with white erect setae at about the middle, with three pairs of reddish-brown to black lateral spots and a narrow vertical transverse band, hardly one-third as wide as the head, very slightly widened forward, surface very slightly hollowed but somewhat elevated on middle portion, where there occurs a somewhat triangular or ovate median spot, its shape variable; ocellar triangle black; lunule reddish brown to black; vertical calli hardly traceable. Face (pl. 9, fig. 3) waxy yellow, with a pair of black roundish lateral spots not attaining mouth-edge, a pair of ill-defined, small brownish spots just below antennal bases, the median portion just below antennae distinctly elevated, hollowed above the upper mouth-edge; eye-margins moderate in width. Cheek rather low, the same color as face, an indistinct brownish spot below lower angle of eye. Back of head (pl. 9, fig. 2) with two pairs of brown to black spots on upper half, the inner pair very small and placed just inside the occipital suture, the outer large along the broad border of eye-margin, these two sometimes united or forming two pairs of longitudinal stripes from occipital foramen to near upper margin along occipital sutures. Antennae (pl. 9, fig. 5) rather long, yellowish; first segment pale, a little shorter than second, apical margin with some brown setae; second segment nearly one-third as long as third, median bristle of the dorsal margin brownish and moderate in length; third segment darker than preceding, especially on externo-apical portion, about 3½ times as long as wide, very slightly narrowed toward the rounded tip; arista black with basal third light yellow, approximately as long as the second and third antennal segments united. Palpi (pl. 9, fig. 7) rather large, about 3 times as long as wide, same width throughout, moderately curved above, light yellow, with dorso-apical margin slightly darkened, a large brown patch near exterior base. All bristles blackish brown; about 6 very fine bristles in occipital row; fronto-orbitals 1:2, equidistant.

Mesonotum (pl. 9, fig. 10) black, the inner margin of humeral calli, anterior portion of notopleural calli, sutural areas, and sometimes the ill-defined, somewhat triangular posterior area, reddish brown, obscured by a grey tomentum and a fine yellow pubescence, three pairs of more or less indistinct dark longitudinal stripes on the disk, of which the median pair is quite inconspicuous and is united at about the middle, the second pair extend from middle of inner margin of humeral calli to before posterior margin through the inner ends of the sutures, where it is interrupted, the remaining pair occur only along the inner margin of lateral postsutural calli; in addition, another pair of brown longitudinal stripes along outer margins of lateral postsutural calli; humeral, notopleural and lateral postsutural calli dull orange yellow. Scutellum bright yellow, with base black; mesophragma entirely black, obscured by a grey tomentum. Pleura (pl. 9, fig. 9) shining black, propleuron, wing-base, and lower borders of hypopleuron and metapleuron reddish brown, with two conspicuous yellow spots, the anterior one rather broad, extending straight from notopleural callus to upper portion of sternopleuron, the posterior one situated on the metapleuron, a little smaller than the anterior spot. All bristles blackish or brownish; scutellars 1 pair, nearly parallel, about as long as scutellum; prescutellars barely in front of level of postalars; notopleural thicker than any others but not longer; supra-alars 1:2; scapulars distinct, sometimes an additional one just behind outer pair and some small bristles between outer and inner pairs.

Abdomen (pl. 9, fig. 12) orange yellow to reddish yellow, with black pattern as follows: The basal segment (first) entirely black; one pair of lateral spots on first tergum (second segment) extending from posterior corners of basal segment to posterior corners of second segment; two pairs lateral spots on second (third segment) tergum, one narrow-transverse pair on anterior one-third, sometimes united, and the other pair along lateral margins narrow and gradually narrowed behind; basal band on the third tergum (fourth segment) narrower than half as long as the tergum, occupying broadly the entire lateral borders; a widely interrupted basal band on the fourth tergum (fifth segment) hardly touching lateral borders; lateral spots on the fifth tergum (sixth segment) somewhat triangular, attaining posterior half along lateral margins; median stripe from the basal band of the third tergum to near the posterior end of abdomen, rather narrow. Bristles of third tergum black; the so-called shining spots of fifth tergum very large, pale brown to reddish brown.

Wing (pl. 9, fig. 1) hyaline, with the veins brown or yellowish brown; pterostigma and entire anal cell



Strumeta dorsalis okinawana (Shiraki)

Male: 1, right wing; 2, head, in profile; 3, head, from front; 4, head, from above; 5, right antenna; 7, left palpus; 9, thorax, from side; 11, abdomen, from above; 12, abdomen, from above; 13, right hindleg; 14, left foreleg; 15, right midleg; 16, hind tibia showing "brush-patch", interno-apical portion. Female: 6, right antenna; 8, left palpus; 11, abdomen, from above.

Strumeta cucurbitae (Coquillett)

17, hind tibia, interno-apical portion.

brown, the apical third of R_1, the apical margin of R_3 and the anterior half of the apical margin of R_5, blackish, thus forming the rather narrow costal and anal stripes; the remaining portion of R_1 yellowish brown, the basal portion of R and the apical corner of the anal lobe, grey. Only one row of bristles on R_{4+5}, extending from base to near middle of apical section; supernumerary lobe rather small, with a few shaggy hairs; prolongation of anal cell very long and longer than cell proper.

Legs light yellow to yellow, hind tibiae sometimes brownish, this coloration almost always gradually paler toward tip. Front leg (pl. 9, fig. 14) 4/5 as long as midleg; femur with approximately 20 black bristles on dorsal surface, on externo-inferior margin two or three longer bristly hairs along median one-third and some oblique pale yellow, very fine, long hairs on apical one-third; tibia distinctly shorter than femur, covered with blackish-brown pubescence and furnished with one brown spurlike apical bristle; tarsi about as long as the tibia, first segment a little longer than the four following together, the pubescence and the bristles on the interno-inferior surface light yellow, the apical bristles black. Midlegs (pl. 9, fig. 15) a little longer than the hindlegs, rather slender; femur covered by a yellowish pubescence, long whitish hairs about middle one-third on externo-inferior margin; tibiae as long as femur, slender and straight, covered by a brown pubescence, the apical spur black and approximately one-third as long as first tarsal segment; tarsi distinctly shorter than the tibia, first segment slightly longer than the four apical segments together, the pubescence and the bristly hairs on interno-inferior surface light yellow, the second to fifth segments with a brown pubescence and with some black bristles along interno-apical margin. Hindlegs (pl. 9, fig. 13): femora slightly curved, covered with sparse brownish pubescence, many long light yellow hairs, on apical half of dorsal surface, sparse hairs of the same color occur along inferior margins; tibiae shorter than the femur, inferior margin nearly straight, superior margin slightly convex, covered by black pubescence, the brush-patch on the inside narrow, rather indistinct; tarsi nearly as long as tibia, the first segment rather long, distinctly half as long as the tibia, longer than the four following segments together, pubescence and bristles as in midleg.

Length: Body 4–7 mm, wing 3.8–6 mm.

Female.—Palpi (pl. 9, fig. 8) broader than in male, inferior margin strongly convex; second antennal segment (pl. 9, fig. 6) about half as long as third; basal segment of ovipositor (pl. 9, fig. 11) yellowish brown or reddish brown, covered with yellowish pubescence, moderate in size, distinctly longer than basal width.

Length: Body (without ovipositor) 4.2–7 mm, wing 4–6 mm.

Material examined. Many males and females collected by the author at Iriomote (Dec. 29–Jan. 9), Ishigaki (Jan. 29–Feb. 21), and Okinawa (Mar. 19–Apr. 3), on the leaves of *Paritium glabrum*, *Garcinia spicata*, *Ficus erecta*, *Glehnia littoralis*, and others; a few specimens from Kumejima and Amami-Oshima collected by Mr. K. Sato.

Host.—Tomato.

Strumeta cucurbitae (Coquillett)

Dacus cucurbitae Coquillett, 1899, p. 129.
Chaetodacus cucurbitae (Coquillett). Shiraki, 1933, p. 73.

A medium-sized, yellowish-brown to reddish-brown species, distinguished by a large brown apical spot and a distinct brown transverse spot on vein m-c, and absence of the occipital row of bristles.

Male and female.—Head slightly narrower than thorax, with relatively large eyes. Frons narrower than one eye, scarcely widened anteriorly, with straight lateral margins, dirty yellow to light yellowish brown, with one small to large ill-defined brownish median spot, the small brownish spots at roots of fronto-orbital bristles almost always obsolete; pubescence very sparse and yellowish, blackish and erect on median portion; vertical calli rather narrow and long, their inner margins almost always parallel; fronto-orbitals more or less elevated between the three inferior bristles; lunule distinctly shining light brown to brown; ocellar triangle small, nearly 1/4 as wide as frons, black or light brown. Face waxy yellowish, with a pair of oval or oblong black lateral spots, comparatively narrow, moderately widened below with straight lateral margins and with a large median elevation; a transverse sulcus just below this; antennal grooves rather narrow and nearly the same width throughout, their outer ridges rather sharp and somewhat tinged with brown to brownish; eye-margins narrow, covered with a silvery white tomentum extending above to fronto-orbitals. Back of head moderately swollen, light brownish yellow, with marginal borders paler; cheek comparatively narrow and short, with distinct genal groove, almost always brownish below lower angle of eye. All bristles black; ocellars and postverticals wanting; three pairs inferior fronto-orbitals, lower two close together; genal sometimes yellowish or brownish. Antenna light yellow to light reddish yellow, tip usually darkened, not longer than the face; first segment about as long as wide; second segment about 1½ times as long as basal, strongly widened apically, nearly 1½ times as long as apical width, without conspicuous median bristle; third seg-

ment about 2½ times as long as second, gradually narrowed toward the rounded apex but sometimes suddenly broadened at base; arista moderate in length, black, with basal portion light yellow. Palpus rather narrow, nearly the same width through the whole length and slightly curved dorsally, light yellowish. Proboscis rather small, brown to dark brown.

Thorax yellowish brown to reddish brown or dark brown, more or less obscured by a whitish tomentum; mesonotum normal in shape, with very short yellowish pubescence which becomes distinctly long and whitish on the humeral calli; disk with three nontomentose longitudinal stripes, posterior half of median stripe divided into two along median postsutural callus, lateral stripes conspicuously widened anteriorly, anterior half somewhat triangular and posterior half usually very faint, both lateral stripes being interrupted at the sutures; relatively small humeral, conspicuously elevated notopleural, narrow and long transverse presutural, long and slender moderately curved lateral postsutural, and very narrow median postsutural calli, light yellow to whitish yellow. Pleura silvery white tomentose except for marginal areas of yellow spots, of which the sternopleural is comparatively large; mesophragma reddish brown or brownish, more or less silvery white tomentose. Scutellum moderate in size, with rounded apex, light yellow to sometimes slightly darker. All bristles brown to black, two pairs of scapulars, two notopleurals, one anterior supra-alar, two posterior supra-alars, two prescutellars, and one mesopleural.

Abdomen about as large as thorax, paler than mesonotum, second tergum lighter; lateral margins of first and second terga more or less blackish, the latter sometimes brownish anteriorly and longest of all the terga; third tergum usually with a rather narrow black transversal basal band which is sometimes obsolete; male with ciliation of blackish-brown bristles; fourth and fifth terga each with a very narrow black longitudinal median stripe interrupted at suture, and with a pair of black short lateral basal transverse bands, that on fifth tergum almost always very small; median stripe sometimes visible at base of third tergum; shining spots on fifth tergum roundish and brownish, in the female rather transverse; pubescence very short, yellowish, somewhat longer and brownish at lateral margins of two basal terga; ovipositor comparatively small, brownish yellow to reddish yellow, lateral margins carinate; sterna comparatively broad.

Wing hyaline, very slightly smoked; pterostigma, R_1, and R_{2+3} yellowish brown to brown, the latter paler on posterior half or more; a large apical spot, a rather broad transverse spot on m-cu, rather broad, brown or blackish-brown anal stripe, r-m often brownish bordered; supernumerary lobe of male conspicuous, with many black short shaggy hairs; prolongation of anal cell distinctly longer than the cell proper in male but not in female.

Legs light yellow to light reddish yellow. Foreleg shorter than mid- or hindlegs; femur with long brownish bristly hairs on apical half of dorsal surface and some long hairs on ventral surface. Midleg slightly longer than hindlegs; femur with slender, long hairs ventrally, a blackish irregular-shaped spot on apical third of ventral surface; tibia brownish on basal area ventrally, the spur of moderate length, black, accompanied by one long yellowish bristle. Hind femur with long brownish bristly hairs on apical half of dorsal surface; hind tibia with comparatively small but distinct brush-patch (pl. 9, fig. 17) on internal apical portion. All tarsi with three or four apical segments more or less darkened; all femora and the hind tibia slightly brownish at apices.

Length: Body 6–7 mm, wing 6–7 mm.

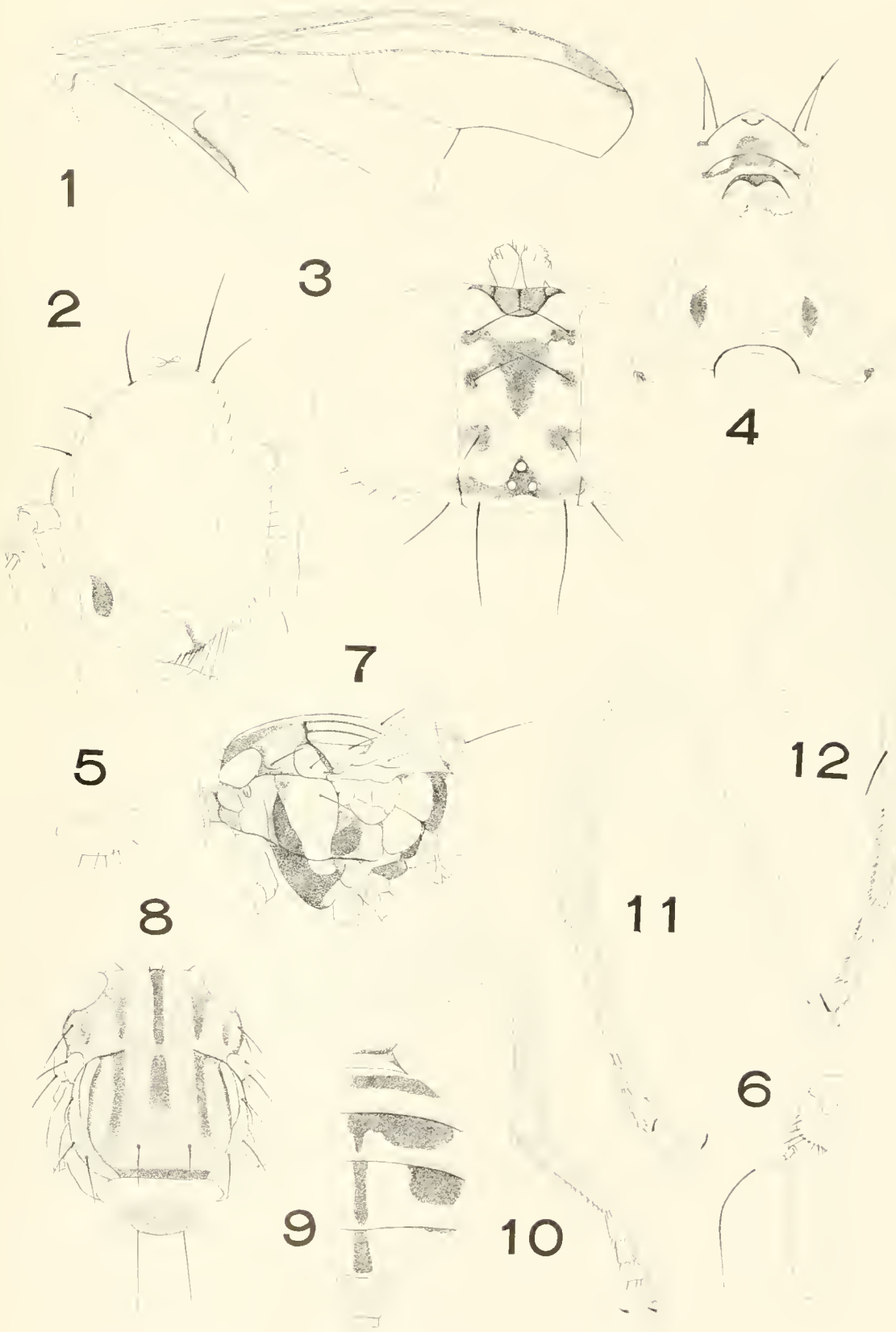
Material examined.—Four females and one male collected by the author at Iriomote (Jan. 21) and Ishigaki (Feb. 4), respectively; some specimens from Miyako Is., collected by scientists of Miyako Plant Quarantine Office, Apr. 5, 1953.

Hosts.—*Momordica charantia*, *Luffa cylindrica*, *Cucumis melo*, *Cucumis sativus*, *Cucurbita moschata*, *Citrullus vulgaris*.

Strumeta asatoi, new species

Plate 10

Female.—Head distinctly narrower than mesonotum, nearly twice as wide as long. Frons (pl. 10, fig. 3) narrower than one-third the width of head, hardly broadened anteriorly, with straight lateral margins, orange yellow with three pairs of blackish lateral spots, a somewhat triangular median spot and a posterior transverse band, the median spot connecting with two pairs of the anterior lateral spots, and posterior band including the ocellar triangle; pubescence very sparse and whitish except on median spot, which is furnished with brown erect setae; lunule blackish. Face (pl. 10, fig. 4) quite bare, light yellow, more or less shining, with one pair of rounded, deep black lateral spots, each with a very short acute point dorsally; eye-margins rather narrow but sharply defined; antennal grooves rather shallow; face in profile slightly hollowed at about the middle, then perpendicularly straight to oral margin; cheek low, with rather conspicuous genal groove,



***Strumeta asatoi*, new species, female**

1, right wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, left palpus; 6, right antenna; 7, thorax, from side; 8, thorax, from above; 9, abdomen, from above; 10, right foreleg; 11, right hindleg; 12, right midleg.

behind which there is an ill-defined narrow brownish spot, its lower border with pale and blackish hairs. Back of head (pl. 10, fig. 2) moderately convex, yellow but very slightly brownish at median portion, a row of sparse brownish bristle-like hairs on lateral border of occipital foramen, long yellowish hairs on lower portions. Bristles black, genal bristle light yellow; superior fronto-orbital farther from upper inferior fronto-orbital than distance between the two inferiors; ocellar minute; postvertical lacking; two pairs conspicuous verticals; occipital row consisting of about five minute bristles. Antenna (pl. 10, fig. 6) yellow, with brown third segment becoming distinctly blackish apically; third segment nearly four times as long as wide, distinctly narrowed at apex; second segment comparatively short, about 1/3 as long as following one, with rather long black bristly hairs along apical margin. Palpus (pl. 10, fig. 5) moderate in length, broadest about the middle, the lower border furnished with some long setae.

Mesonotum (pl. 10, fig. 8) black, with internal posterior margin of humeral calli and lateral borders reddish brown, obscured by a greyish tomentum and covered with dense minute black pubescence, five black longitudinal streaks on disk, interrupted at transverse suture, and seen from behind, united at the very broad black posterior border; humeral calli whitish yellow, with internal anterior border reddish or brownish black; notopleural and lateral postsutural calli greyish yellow, the latter comparatively narrow and short. Scutellum waxy yellow, with apical half brown. Pleura (pl. 10, fig. 7) moderately shining black, but reddish brown on the area between the front coxae and the humeral calli and also at wing-bases, and possessing conspicuous straw-colored spots as follows: one large spot covering the entire posterior half of mesopleuron (in reality a continuation of the elongated spot immediately in front of suture); one small round spot at the dorsal end of the sternopleuron; one large spot on the metapleuron, as well as on the space just below it. Mesophragma shining black. All bristles black; hind posterior supra-alar distinctly behind the level of the presutellar; one anterior supra-alar; two notopleurals; scapulars rather conspicuous, the median pair more slender; one mesopleural; pteropleural lacking; one pair scutellar much longer than scutellum, directed straight back.

Abdomen (pl. 10, fig. 9) reddish yellow with black bands and stripes, dense pale pubescence present; first tergum with broad basal band extending along entire lateral margin; second tergum with band on anterior half not reaching basal margin and hardly reaching lateral margins; third tergum with broad basal band narrowed laterally, its hind margin distinctly incurved centrally where there projects a short triangular longitudinal stripe; fourth and fifth terga each with rather narrow median longitudinal band interrupted just before posterior margin, and each with a pair of lateral spots, the latter very large and subquadrate on the fourth but very narrow along basal margin on fifth tergum; the shining patches very large, transverse oblong, reddish brown. Ovipositor broad, from dorsal view about 2/3 as long as wide, yellow, rather sparsely pubescent.

Wing (pl. 10, fig. 1) moderate in size, hyaline; R_{4+5} distinctly bristled to about middle of apical section; apical prolongation of anal cell very long, as long as cell proper and distinctly longer than apical section of anal vein; pterostigma light yellow, with brown apex; costal band very weak, only narrowly distinct at apex, very faint in R_1; anal streak narrow, not extending to wing-margin.

Legs light yellow, coxae and apical portion of hind tibia somewhat brownish. Foreleg (pl. 10, fig. 10) conspicuously shorter than mid- or hindleg; femur a little longer than tibia, a row of about five black, rather thick long hairs on dorsal surface of apical half, externally some similar but shorter ones, on the internal inferior margin of apical half a row of about nine long, very fine, nearly colorless hairs becoming shorter toward apex, four brown shorter hairs on external inferior margin of apical fourth, remaining pubescence very sparse, much shorter and brownish; fore tibia nearly as long as tarsus, covered with brownish pubescence, that on apico-internal area long and yellowish white, two short light reddish-yellow apical spurlike bristles, a row of many yellowish-brown bristles the same length as spurlike ones along the apical margin; first tarsal segment very slightly shorter than the following four together, some long black hairs on dorsal surface, and rather long light yellow bristly hairs on internal ventral surface, externally a row of black spinelike bristles. Midleg (pl. 10, fig. 12) longer than hindleg; femur with short blackish setae intermixed with white ones on external dorsal surface of apical half, a row of very sparse longer, white hairs along external ventral margin, hind tibia as long as femur, covered with black pubescence, a black apical spur one-third as long as first tarsal segment, and three small brownish apical spinelike bristles; tarsi shorter than tibia, first segment conspicuously longer than the remaining four together, yellowish-brown pubescent, ventral surface with two rows of black, spinelike bristles longer and yellowish proximally. Hind femur (pl. 10, fig. 11) conspicuously longer than the tibia, dorsal surface with long, pale hairs very sparse on basal half and very conspicous and long on apical half, ventral surface with two irregular rows of shorter

pale yellowish, sparse hairs; tibia slightly longer than tarsus, with black, rather long, hairs longer and yellowish on the ventral surface, especially on apical portion; first tarsal segment half as long as tibia and shorter than the four apical segments together, ventral surface with yellowish bristles and lacking black ones, except apically.

Length: Body 5.8–6 mm, wing 5–5.2 mm.

Types.—Holotype, ♀, USNM 69374, Ryukyu Is., Apr. 23, 1953 (USNM); paratypes, 6 ♀ (2 USNM) (4 NIAS).

Remarks.—This species was first found by Mr. K. Asato, the Director of the Ryukyu Plant Quarantine Station, Naha, Okinawa. It is closely allied to *Strumeta hyalina* Shiraki (1933, p. 62), but it might be distinguished from the latter by the smaller size, the linear costal band, the cubital vein hardly developed beyond the corner of $1M_2$ (in *hyalina* it is conspicuous), the face slightly hollowed just below the middle (in *hyalina* conspicuously grooved transversely), the lateral spots of frons subequidistant (in *hyalina* equidistant), and other characters.

Subfamily Trypetinae

Genus *Acidiella* Hendel

Acidiella Hendel, 1914, p. 83.

Acidiella okinawaensis, new species

Plate 11

Allied to *Acidiella mushaensis* Shiraki, but easily distinguished by the entirely castaneous black abdomen, the shape of the third antennal segment, the distinctly but shortly produced upper mouth-edge, and others.

Male.—Head as wide as thorax, 1.8 times as wide as long, 1.2 times as high as long. Frons (pl. 11, fig. 3) reddish yellow, that color obscured by yellowish-grey tomentum, with black, very sparse, erect pubescence, nearly flat, very slightly elevated above eyes, as wide as one eye, hardly widened anteriorly, with straight lateral margins; vertical calli comparatively short, 1/3 as long as frons, more or less elevated and shining; ocellar triangle comparatively large, black only between ocelli, just vertex with a rather sharp straight transverse carina extending to bases of inner verticals, lunule nearly half as wide as frons, more or less shining, with a distinct median longitudinal sulcus, the upper margin distinctly brown, this color hardly extending to cheeks along inner margins of orbits. Face (pl. 11, fig. 4) light yellow, this color more or less obscured by a whitish tomentum, rather broad, conspicuously wider than high, nearly straight but bent abruptly forward; slightly above upper mouth-edge, a distinct short transverse furrow; orbits distinct, more or less elevated, very slightly widened below; antennal groove shallow and broad, distinctly attaining mouth-edge, with a distinct vibrissal ridge with minute brown setae. Back of head (pl. 11, fig. 2) swollen, upper portion slightly hollowed, along one row of five or six distinct black short bristles outer portions of lateral margins of occiput, lower half with many fine black hairs becoming longer and more bristly on ventral surface; cheek narrow, with a distinct but shallow genal groove, with black long pubescence on lower portion. Eye in profile wider than half its length, with posterior margin nearly straight and anterior margin evenly convex, their upper and lower angles subequally rounded. All bristles black, comparatively short: Fronto-orbitals 1:3, the superior directed externo-posteriorly, nearly as long as upper inferior, latter directed interno-inferiorly, the lowest one shortest; ocellars distinctly divergent, a little shorter than superior fronto-orbital; inner and outer verticals subequal in length, the former parallel; postverticals very slightly divergent, a little shorter than ocellar, a small inwardly directed occipital behind inner vertical. Antenna (pl. 11, fig. 5) inserted just below middle of eye, light yellow, shorter than face; second segment nearly half as long as third, with a distinct median bristle, one row of short bristles along apical margin; third segment nearly twice as long as wide, dorsal margin slightly undulate, more or less brown and microscopically pubescent, with round apex; arista pubescent.

Thorax approximately 1.2 times as long as wide, 1.15 times as long as high. Mesonotum (pl. 11, fig. 8) nearly as long as wide, shining reddish yellow, with black pubescence; humeral calli with some black erect hairs, the lower half ivory yellow; notopleural calli well elevated, comparatively large; scutellum 1.6 times as wide as long, basal half flat, apical half rounded, without distinct lateral carinae, colored, and pubescent as in the mesonotum, but apex more or less yellowish. Pleura (pl. 11, fig. 7) paler than notum, an ivory yellow longitudinal streak from the posterior end of humeral callus to the wing-base, covered with a very sparse erect blackish pubescence along the upper margin of pleura; prothorax with 5 or 6 black setae; sternopleuron with many black long hairs along ventral margin. All bristles black: scapular weak, inner pair being almost parallel and a little shorter than outer humeral as long as anterior notopleural, the latter longer than posterior; dorsocentral a little behind level of anterior supra-

***Acidiella okinawaensis*, new species, male**

1, right wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, right antenna; 6, right palpus; 7, thorax, from side; 8, thorax, from above; 9, abdomen, from above; 10, left foreleg; 11, right midleg; 12, left hindleg.

alars, shorter than presentellars, which are parallel and on a line connecting inner posterior supra-alars; two pairs scutellars, apical directed moderately inwards and shorter than basal mesopleurals two, the lower very weak; pteropleural and sternopleural one, the latter directed distinctly upward.

Abdomen (pl. 11, fig. 9) as long as thorax, slightly broader than the latter, entirely shining castaneous black, blackish pubescent, long erect hairs on lateral border of the second tergite; fifth tergite nearly as long as preceding two together, five pairs of black bristly hairs along posterior margin; venter somewhat paler than dorsum, with last sternite conspicuously ochreous; genitalia conspicuous, basal segment shining black, with many black bristly hairs, the dorsal appendages broad, ventral very narrow with a short apical stylet, both yellowish.

Wing (pl. 11, fig. 1) longer than the body, nearly 1/3 as wide as long, gradually narrowed toward apex; costal vein distinctly attaining tip of vein m, costal spine very short and nearly as long as costal bristles; R_1 suddenly bent upward at apical portion; R_{2+3} hardly undulate; R_{4+5} with eight distinct bristles from its base to r-m; m slightly curved and almost parallel with R_{4+5} at apical half of apical section; r-m straight and perpendicular, well beyond middle of $1M_2$; m-cu slightly convex, oblique, ending well basad of wing margin, connected at right angle with cu; pterostigma 2/3 as long as second costal cell, apex not pointed; anal cell distinctly shorter than basal cell, but with sharp, long inferior prolongation. Brownish black, with extreme base more or less yellowish grey, second costal cell grey with base light brown and apex brown, allulae and anal lobe greyish, the hyaline markings as follows: costal two, the first just beyond pterostigma and occupying nearly the basal one-third of mouth of R_1, extending to or just below about middle of third section of m in a long triangle, a small spot along Cu below tip of latter; apical spot from beyond middle of apical section of R_{4+5} to tip of m, gradually broadened below, its outer margin nearly parallel with costa and its inner margin more or less straight; subapical spot triangular, extending from below middle of apical section of R_{4+5} to wing margin, distinctly widened below, its outer margin parallel with inner margin of apical spot and ending at one-third the distance from tip of mouth of $2M_2$, its inner margin parallel with m-cu and ending at tip of Cu; the remaining spot occupying nearly basal half of Cu, except at extreme base, where there is a small spot. Halteres yellowish, with comparatively large, more or less brownish knob; squamulae greyish with black margin.

Legs moderate in length, yellowish-brownish pubescent. Forelegs (pl. 11, fig. 10) shortest; forefemur with two rows of black bristly hairs on dorsal surface, one row of approximately six black long bristle hairs along externoventral margin, external surface covered with black sparse strong setae; tibia nearly 3/4 as long as femur, as long as tarsus; first tarsal segment shorter than the four following together, brushlike bristles on internoventral surface sparse and brownish, minute apical spines of each segment brownish. Midlegs (pl. 11, fig. 11) longest; midfemur as long as tibia, externoventral margin with black long setae; tibia with only one conspicuously long black apical spur; tarsi shorter than tibia, first segment nearly half as long as tibia, shorter than the four following together, brushlike bristles on internoventral surface rather short and very sparse, brownish, the three segments following with two black apical spinelike bristles ventrally. Hind femur (pl. 11, fig. 12) as long as tibia, apical third of dorsal surface with two pairs of black long bristly hairs, apical third of externoventral margin with very few brownish hairs; tibia longer than tarsus, the pubescence longer on ventral surface; first tarsal segment longer than the four following together, shorter than half the tibia, bristles and spines of tarsi as in midleg.

Length: Body 4–4.5 mm, wings 4.4–4.8 mm.

Types.—Holotype, ♂, USNM 69375; paratype, ♂ (NIAS); both collected on Mt. Yonaha, Okinawa Is., April 1953.

Carpophthoracidia, new genus

Near *Carpophthorella* Hendel, but distinguished by the fronto-orbitals 1:3, the hardly plumose arista, the nonbristled R_{4+5}, the second longitudinal band of wing distinctly divided into two, connecting with the costal band, and other characters.

Female.—Head as wide as thorax, distinctly wider than long, 2/3 as long as high. Frons parallel-sided, nearly 1/3 as wide as head. Face rather narrow, slightly hollowed in the middle. Back of head rather strongly swollen beneath; cheeks 1/6 as high as eye, which is narrowed below with rather straight posterior margin, microscopically pubescent. Antennae inserted at middle of eye, much shorter than face; third segment rounded at tip; arista pubescent. Palpi very short, broad. Thorax not long, moderately shining, with pale-colored longitudinal pattern on the mesonotum. Abdomen short, moderate in width; 6 tergum nearly a half as long 5th; ovipositor moderate in length, flattened. Wings comparatively large, with a very broad costal band and two rays; R_{2+3} straight; R_{4+5} nearly parallel with R_{2+3}, but apical section slightly curved posteriorly, bristled

nearly throughout the whole length on both sides; r-m distinctly beyond middle of tM_2, straight; R5 not broadened at apex; anal cell a little shorter than M, with angulately concave apical margin, drawn out into a sharply pointed inferior angle. Femora moderately thickened, the pubescence rather sparse; midtibiae with one long apical spur. Chaetotaxy complete: fronto-orbitals 1:3; dorsocentrals on the level of anterior supra-alar bristles; mesopleurals 1; scutellars two pairs.

Genotype: *Carpophthoracidia matsumotoi*, new species.

Carpophthoracidia matsumotoi, new species

Plate 12

Female.—Head nearly as wide as thorax, nearly twice as wide as long, a little longer than high. Frons (pl. 12, fig. 2) light orange yellow, with very few sparse minute black hairs which become rather conspicuous on the elevated pale-colored and shining orbits, as wide as eye, with straight and parallel lateral margins, rather flat but slightly elevated above eye; lunule somewhat semicircular, narrower than half as wide as frons, coloration similar to orbits and slightly shining; ocellar triangle small, blackish, just behind it there is no transverse carina; vertical calli very short but well defined, moderately elevated, their posterior margins obliquely truncated and not extending behind eye-angle. Face (pl. 12, fig. 3) slightly paler than frons, comparatively narrow, with lateral margins curved outwards; orbits well defined with rather deep sulci, moderately broadened beneath; antennal grooves very shallow, hardly traceable; the vibrissal portion furnished with some black, very short, irregularly directed setae which extend above to the inferior portion of parafacialia. Head in profile (pl. 12, fig. 1) longer than half the height, with face slightly hollowed about at middle; back of head light yellowish, moderately swollen, with the superior portion nearly flat and irregularly blackish brown, inferior portion with black sparse long hairs extending onto the cheeks; cheeks more or less whitish, moderate in size, with a distinct genal groove. All bristles black: fronto-orbitals 1:3, the superior one longest and directed externoposteriorly, the three inferiors gradually shortened anteriorly and directed interno-anteriorly; ocellars as long as upper inferior fronto-orbital but weaker, moderately divergent and directed forwards; inner verticals longest, nearly parallel, outer verticals nearly as long as the lowest inferior fronto-orbital; postverticals weak, parallel, directed slightly forward; the inner occipital bristles present but weak; genal bristle shorter than the inferior fronto-orbitals; occipital row rather conspicuous, composed of about 11 bristles extending to near middle of eye. Eye black, microscopically pubescent, in profile rather oblique, half as wide as long, with anterior margin strongly convex and posterior margin rather straight, distinctly narrowed beneath; when seen from above wider than half the length, with anterior corner distinctly narrowed and posterior corner obtuse; when seen from front the inner margin S-like curved, with both superior and inferior corners distinctly narrowed. Antennae (pl. 12, fig. 4) light yellow, inserted nearly at middle of eye, conspicuously shorter than face; first segment very short, with some black bristly hairs on apical margin; second segment nearly as long as its apical width, with a long black median bristle; along externo-apical margin there are black sparse bristly hairs which become longer at the inferior apex; third segment fully 3 times as long as preceding, gradually narrowed toward round apex; arista 1.5 times as long as third segment, very shortly plumose, black with basal third light yellow. Palpi (pl. 12, fig. 5) light reddish yellow, very short, hardly half as wide as long, with apex broadly rounded, furnished with many long black bristly hairs.

Thorax as wide as head, longer than wide or a little longer than high, strongly shining. Mesonotum (pl. 12, fig. 6) brown pubescent, as long as wide, moderately convex, dark castaneous brown, with two pairs of light reddish-yellow broad longitudinal bands, the median one extending from behind anterior margin to middle of metazona, the other along just outer margins of the median bands, extending slightly behind the posterior ends of latter but not reaching anterior ends, distinctly interrupted at sutures; humeral calli rather small, light reddish yellow; notopleural calli moderately elevated, dark castaneous brown; wing-bases light yellow. Scutellum 1/3 as long as mesonotum, longer than half the basal width, flat, light yellow, with somewhat darkened basal portions of lateral borders descending obliquely below. Pleura (pl. 12, fig. 7) light brownish yellow, with the superior third, including inferior portion of humeral callus, light yellow and middle space from posterior portion of mesopleuron to metapleuron castaneous brown, almost free of pubescence except on brownish-yellow portion, where there is a very sparse short blackish pubescence; sternopleuron comparatively large, the ventral border furnished with some black long bristly hairs. All bristles black: scapulars two pairs; presuturals well developed; dorsocentrals just anterior to level of single pair of anterior supra-alars; prescutellars nearly in a line connecting the two outer pairs of posterior supra-alars; scutellars two pairs, very long, the apical ones parallel; notopleurals two pairs; mesopleurals 1, but followed

***Carpophthoracidia matsumotoi*, new genus, new species, female**

1, head, in profile; 2, head, from above; 3, head, from front; 4, left antenna; 5, right palpus; 6, thorax, from above; 7, thorax, from side; 8, abdomen, from above; 9, right wing; 10, left foreleg without tarsus; 11, left hindleg; 12, left midleg.

by four very fine bristles; pteropleural and sternopleural bristles rather short, directed upward; propleurals composed of one row of some six fine bristles.

Abdomen (pl. 12, fig. 8) (without ovipositor) as long as thorax, slightly broader, shining brownish black, covered with black sparse pubescence which becomes longer at lateral borders; fifth tergum conspicuously longer than one following, with a yellowish-brown posterior marginal band which is triangularly broadened anteriorly in the middle; sixth tergum nearly half as long as one preceding, with similar colored narrow band along posterior margin; basal segment of ovipositor strongly shining, almost black, microscopically pubescent, shorter than wide, moderately flattened, second segment yellowish. Venter blackish, with posterior half of each sternum and pleural membranes dirty yellow.

Wings (pl. 12, fig. 9) normal in shape, slightly longer than body; costal vein extending to the end of m, well bristled but rather inconspicuous from end of R_{2+3} to m, the costal spine distinct but not conspicuously long; R_{4+5} very slightly curved, very irregularly and sparsely bristled throughout; R_1 well bristled as in the costa; m nearly parallel with R_{4+5} at apical section; r-m straight, parallel with m-cu; pterostigma a little longer than half the length of second costal cell; anal cell shorter than M, the apical margin angularly concave, with sharply pointed inferior angle. The blackish-brown pattern of wings similar to *Carpophthorella* as follows: costal band very broad from anal cell to apical border of R_5 along costa, with light brownish second costal cell, a somewhat hyaline spot just beyond pterostigma, a very small hyaline dot at apex of R_{2+3} and a light colored straight, oblique line near base, its posterior margin extending from beyond inferior angle of anal cell to middle of apical section of R_{4+5}, straight through posterior end of r-m and nearly right-angularly bent posteriorly to end of cu; the second band composed of subapical and median cross bands conspicuous, the former extending from just beyond middle of apical section of R_{4+5} straight to a point just before middle of mouth of $2M_2$, the latter paler, on m-cu conspicuously broadened behind to entire apex of Cu and narrowly connecting with the costal band. Halteres light yellow, with stalk whitish.

Legs light yellow, rather sparsely blackish pubescent. Forelegs (pl. 12, fig. 10) distinctly shorter than posterior pairs; femur distinctly longer than tibia, two irregular rows of black long bristly hairs on externodorsal surface and on apical two-thirds of the externoventral margin one row of black conspicuously long ones becoming very short and fine at apical portion; tibiae without any special bristles. Midlegs (pl. 12, fig. 12) longest; femur slightly longer than tibia, three fine black bristly hairs on apical portion of externoventral margin; tibiae with only one black apical spur which is twice as long as apical width; tarsi 5/6 as long as tibia, the first segment hardly half as long as tibia or conspicuously longer than the four following segments, the internoventral surface with relatively short yellowish brushlike bristly hairs, the four apical segments with black fine bristly hairs on dorsal apex of each segment, claws yellowish with apices black. Hindleg (pl. 12, fig. 11) nearly as long as midleg, somewhat thicker than latter; femora with a rather long pubescence on the external surface; near dorsal apex one pair of conspicuous bristly hairs and on the externoventral margin an irregular row of bristly hairs of which some apical ones are distinctly longer than others; tibiae nearly as long as femur, with one row of some six black bristly hairs about the middle third of externodorsal margin; tarsi as in midleg.

Length: Body (Without ovipositor) 3.4 mm, wing 3.8 mm.

Holotype.—One female, collected by Mr. A. Matsumoto, Okinawa Is., Apr. 6, 1953 (NIAS).

Chenacidiella, new genus

Closely allied to *Acidiella* Hendel, but at once distinguished from it by the dorsocentral bristles, which are situated posterior to a line connecting the anterior supra-alar bristles; the mesopleural bristles two; the inferior prolongation of anal cell very long, similar to the subfamily *Dacinae*; and other characters.

Genotype: *Acidiella purpureiseta* Chen.

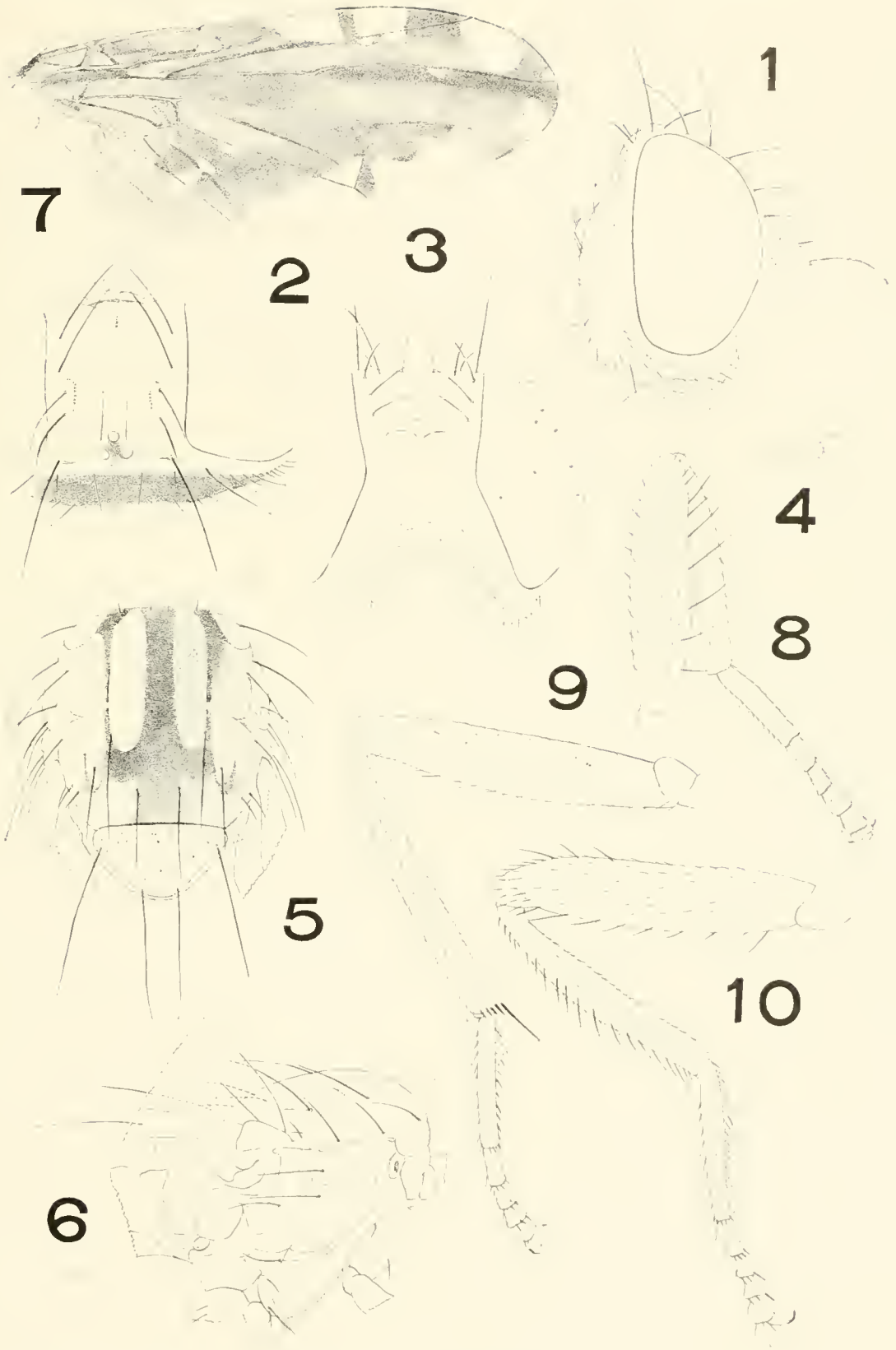
Chenacidiella purpureiseta (Chen)

Plate 13

Acidiella purpureiseta Chen, 1948, p. 115, fig. 15.

A rather small brownish species, distinguished by by the wing pattern.

Male.—Head nearly as wide as thorax, nearly twice as wide as long, 1.3 times as high as long. Frons (pl. 13, fig. 2) almost parallel-sided, nearly 1.5 times as long as wide, light brownish yellow, whitish tomentose, with brown erect pubescence about the middle; vertical calli dull shining, extending to just behind the middle of frons; lunule shining brown; ocellar triangle small, black, just behind which there is a fine but distinct transverse carina reaching to roots of inner vertical bristles; fronto-orbits not traceable. Face (pl. 13, fig. 3) comparatively small, distinctly shorter than frons,



***Chenacidiella purpureiseta* (Chen), male**

1, head, in profile; 2, head, from above; 3, head, from front; 4, right palpus; 5, thorax, from above; 6, thorax, from side; 7, right wing; 8, right foreleg; 9, right midleg; 10, right hindleg.

paler than the latter, whitish tomentose, with distinct orbits which are same width throughout the entire length; antennal grooves well defined and moderate in depth, their intermediate portion flat and slightly concave. Back of head (pl. 13, fig. 1) moderately swollen, light brownish yellow, with one pair of blackish large subtriangular lateral spots just above the occipital foramen, furnished with some black pubescence on the inferior half; cheeks rather low, with a very shallow genal groove, one row of blackish short bristly hairs along the inferior margin which extend to above vibrissal angle. Antenna light yellow with dorsal margin more or less brown, shorter than face; second segment whitish, with a conspicuous blackish median bristle, one row of blackish setae along the apical margin; third segment rather broad with rounded apex, fully twice as long as wide; arista black and short pubescent. Palpi (pl. 13, fig. 4) very narrow with very long bristly hairs. All bristles blackish brown or reddish brown: frontoorbitals 2:3, the lower superior thickest and longest; ocellars as long as upper superior, not divergent but parallel; postverticals rather weak, parallel; inner verticals strong, not divergent, the outer strongly directed outward, one bristle (inner occipital) as long as postverticals between the postverticals and the outer verticals; genal bristle distinct.

Thorax distinctly longer than wide, dirty yellow, the dorsum fairly tomentose. Mesonotum (pl. 13, fig. 5) as long as wide, covered with a black minute oblique pubescence, with three blackish broad longitudinal streaks, the median one complete and extending from anterior to posterior margins, broadened behind and paler, the lateral pair interrupted at sutures and ending posteriorly at inner post-alar bristle, but entire, with a very narrow stripe at inside and more or less connected with median in the middle of the metazona; humeral callus rather small, ivory yellow, this color extending to wing-base along superior margin of pleura; notopleural calli brownish; scutellum somewhat triangular with rather flat disk and with nearly perpendicular marginal borders, ivory yellow. Pleura (pl. 13, fig. 6) nearly as high as long, covered with a very sparse blackish minute pubescence, more or less shining. All bristles brownish black, rather long: Scapulars two pairs, very weak and short; humerals situated at about middle; notopleurals 2; presuturals 1; dorsocentrals situated just before the level of anterior supra-alars; supra-alars 1:2, another short but distinct bristle just inside the wing-base; prescutellars situated on level of inner post-alar bristles, in one specimen there is one pair of long distinct bristles between dorsocentrals and inner post-alars; scutellars two pairs, the apical pair directed inward or distinctly crossed; mesopleurals 2, pteropleural 1, sternopleural 1, all directed posteriorly.

Abdomen as long as thorax, broader than the latter, yellowish, whitish tomentose, blackish pubescent, third to fifth terga each with brownish-black basal band occupying entire lateral surface, piceous in one specimen (third tergum light castaneous), terga (except the first) each with a very narrow yellowish posterior margin; genitalia brownish yellow, dorsal appendage with long hairs at apex and ventral appendage narrow and somewhat pointed.

Wings (pl. 13, fig. 7) comparatively large, blackish brown, apical third of apex of R_1 darker than elsewhere, hyaline spots as shown in figure; costal spine very short, nearly as long as costal bristles, one bristle on first section of costa conspicuously long; pterostigma nearly 2/3 as long as second costal cell; R_5 nearly same width throughout; anal cell with a very long pointed inferior prolongation; R_{4+5} nearly straight, bristled to a little beyond middle of R_5. Halteres small, dirty yellow or light brownish yellow.

Legs light brownish yellow, blackish or brownish pubescent. Forelegs (pl. 13, fig. 8) shortest; femur with 5–7 long blackish bristles on externoventral margin, several short ones on apical half of externodorsal surface; tibia distinctly shorter than femur; tarsi as long as tibia, first segment a little shorter than following four segments together, the light yellowish brushlike bristly hairs on internoventral surface rather sparse. Midlegs (pl. 13, fig. 9) longest; femur as long as tibia, which has one black apical spur and a few short bristles along apical margin; tarsi conspicuously shorter than tibia, dorsal surface furnished with rather long pubescence, first segment longer than the following four segments together, with rather long pale brushlike bristly hairs on internoventral surface. Hindlegs (pl. 13, fig. 10): femur distinctly longer than tibia, one row of blackish short sparse bristly hairs along externoventral margin, two or three somewhat long ones on apical portion of dorsal surface; tibia with one row of pale colored bristly hairs along externodorsal margin; tarsi as long as tibia, the first segment conspicuously longer than the following four segments together as in midtarsi.

Length: Body 3.7–3.8 mm, wing 4.2–4.4 mm.

Material examined.—Two males collected by the author in Amami-Oshima Is., May 11 and 25, 1953.

Distribution.—Formosa; Yakushima, Japan; Amami-Oshima Is.

Remarks. The present specimens differ from the figure of Chen's report in the hyaline spots of wings and in the abdominal coloration, but this differentiation might be usual in any species.

Genus *Hendelina* Hardy

Pseudopheniscus Hendel, 1913 (error), p. 82; 1914 (preocc.), pp. 83, 88.—Shiraki, 1933, p. 164.
Hendelina Hardy, 1951, p. 179.

Hendelina fossata (Fabricius)

Plate 14

Tephritis fossata Fabricius, 1805, p. 320.
Anomoia climia Walker, 1849, p. 1033.
Ortalis regularis Doleschall, 1859, p. 119.
Trypeta fossata (Fabricius).—Bigot, 1892, p. 224.
Pseudospheniscus fossatus (Fabricius).—Shiraki, 1933, p. 169.

Blackish species of rather small size, easily distinguished from the known oriental *Hendelina* by the wholly hyaline costal cells and the three broad hyaline apical wing bands.

Male.—Head as wide as thorax, 1.7 times as wide as long, 1.6 times as high as long. Frons (pl. 14, fig. 3) reddish yellow, with very sparse brown erect pubescence, orbits covered with a whitish tomentum, parallel-sided, a little narrower than eye, very slightly elevated above eyes; vertical calli moderately shining but rather ill defined, not extending to middle of frons and not distinctly oblique; ocellar triangle somewhat blackish, with comparatively large ocelli which are equidistant; rather distinct transverse carina between roots of inner vertical bristles; lunule not distinct, small, somewhat concave, brown. Face (pl. 14, fig. 4) somewhat yellowish, distinctly shorter than frons, comparatively narrow but shorter than inferior width, with straight lateral margins, above the upper mouth-edge a distinct transverse sulcus; orbits very narrow, distinctly widened below; antennal grooves distinct, rather deep, brown; vibrissal edges with rather numerous black short bristles; epistoma rather conspicuous. Back of head (pl. 14, fig. 2) black, with occiput and lateral portions yellowish brown, rather flat with lower portion moderately swollen; cheeks very narrow, rather sparsely pubescent. All bristles black; fronto-orbitals 2:3, superior pairs thicker than inferiors, which are directed moderately inward the anteriormost shortest; ocellar bristle nearly as long as anterior inferior fronto-orbital, slightly directed inward; postverticals fine, shorter than ocellars, moderately divergent; inner verticals strongest, parallel, a distinct bristle (inner occipital) behind between inner vertical and postvertical bristles; bristles of occipital row rather long and straight, extending to near middle of eye; genal bristle long. Antennae (pl. 14, fig. 9) ochraceous, with third segment brownish, conspicuously shorter than face; second segment comparatively large, half as long as the following one, apical margin with one row of rather strong bristly hairs, median bristle nearly half as long as this segment; third segment nearly twice as long as wide, with apex evenly rounded, dorsal margin distinctly ciliate; arista distinctly longer than antenna, rather long pubescent. Palpi (pl. 14, fig. 10) comparatively broad (the author formerly described it as slender), nearly 2.5 times as long as wide, same width throughout with rounded apex, rather strongly bristled.

Thorax 1.4 times as long as wide, somewhat purplish black. Mesonotum (pl. 14, fig. 5) slightly whitish tomentose and black pubescent, with a pair of very fine black submedian longitudinal stripes from inner corners of the humeral calli to roots of dorsocentral bristles through inner ends of sutures; humeral calli more or less brownish, with black erect hairs; notopleural calli not conspicuous; scutellum triangular with rounded apex, nearly 1.6 times as wide as long, nearly as tomentose and pubescent as mesonotum, disk flat with lateral borders nearly perpendicular, their basal portions more or less brownish. Pleura (pl. 14, fig. 6) strongly shining, not tomentose but very sparsely pubescent, yellowish brown just below the wing-bases; sternopleuron with short bristly hairs along ventral margin; mesophragma and postnotum uniformly black, slightly obscured by a whitish tomentum. All bristles black, rather long: inner scapulars a little weaker than outer, slightly divergent; humerals situated at about the middle, a little longer than presuturals; notopleurals two, the anterior distinctly longer than the posterior, which is distinctly shorter than presutural; dorsocentrals behind the level of anterior supra-alars; presutellars slightly divergent, nearly on a line connecting inner posterior supra-alars; outer posterior supra-alar strongly curved, as long as inner; scutellar bristles two pairs, the apical pair nearly parallel, distinctly shorter than basal pair; mesopleural bristles two, as long as pteropleural, which is directed posterodorsally, sternopleural directed upward and as long as mesopleural.

Abdomen (pl. 14, fig. 7) shorter than thorax, a little wider than latter, shining black, slightly yellowish-grey tomentose, black pubescent, the erect hairs on lateral borders of second tergum short, posterior margins of third and fourth terga with rather numerous fine bristly hairs, the fifth tergum with two pairs of long bristly hairs along apical margin; genitalia yellowish brown, with rather long blackish dorsal appendages.

Wings (pl. 14, fig. 1) longer than body, twice as long as wide, with apex rather narrowly rounded; costal vein reaching tip of m, costal spine comparatively short, basal bristle conspicuously long; R_1 bent at a nearly right angle at apical portion; apical half of

Hendelina fossata (Fabricius)

Male: 1, wing; 2, head, [illegible]ale; 3, head, from above; 4, head, from front; 5, thorax, from above; 6, thorax, from side; 7, abdomen, from above; 9, left antenna; 10, right palpus; 11, right foreleg; 12, right midleg; 13, right hindleg. Female: 8, abdomen, from above.

R_{2+3} undulate; R_{4+5} more or less sinuate apically, well bristled from base to beyond r-m; apical section of m nearly parallel with R_{2+3}; r-m beyond middle of $1M_2$, straight and perpendicular; m-cu nearly straight, parallel with r-m, with inferior angle of $1M_2$ nearly 70°; pterostigma nearly half as long as second costal cell; anal cell distinctly shorter than basal cell, but with very long inferior prolongation which is longer than cell proper. Blackish brown, with costal cells, base of R, allulae and anal lobe hyaline; the hyaline markings as follows: a triangular costal indentation just beyond pterostigma, extending below to base of r-m; a median cross band from costa to posterior wing-margin near tip of Cu, slightly narrowed medially and very indistinctly curved; a very large triangular apical spot from near tip of R_{2+3} to posterior wing-margin, leaving rather narrow costal and submedian bands, in the middle a narrow subapical band at center extending from R_{4+5} to tip of m; a subbasal streak from basal cell to posterior corner of Cu.

Legs yellowish, blackish pubescent, two posterior pairs of femora blackish, external surface of front femur, basal portion of midtibia and hind tibia (except the tips) brownish. Forelegs (pl. 14, fig. 11) shortest; femora a little longer than tibia, two rows of black short bristly hairs on externodorsal surface and eight black long bristly hairs, of which the two apical ones are short along the externoventral margin; tibia nearly as long as tarsus; first tarsal segment nearly half as long as tibia, the yellowish brushlike bristles on internoventral surface rather sparse and long. Midlegs (pl. 14, fig. 12) longest; femora distinctly longer than tibia, one row of black short bristly hairs along the externoventral margin; tibiae distinctly longer than tarsus, with one black apical spur which is one-third as long as first tarsal segment, many black short bristles along the apical margin; first tarsal segment 1/2 as long as tibia, or a little longer than four following segments together, internoventral surface with brownish rather sparse brushlike bristles, the four apical tarsal segments with two rows of black minute bristles on ventral surface. Hindlegs (pl. 14, fig. 13): femora with one pair of black long bristly hairs near dorsal apex, externoventral margin with one row of black somewhat long hairs, the apical ones bristly; tibia shorter than femur, externodorsal margin with one row of black very sparse bristly hairs; tarsi as long as tibia, the first segment nearly as long as the four following segments together, the bristles as on midtarsi.

Length: Body 4.2 mm, wing 5 mm.

Female (pl. 14, fig. 8).—Not conspicuously different from the male, but third antennal segment comparatively narrow, second abdominal tergum distinctly narrower than third. Sixth abdominal tergum a little shorter than fifth; basal segment of ovipositor depressed, conspicuously shorter than wide, as long as fifth tergum, shining black, rather sparsely pubescent, second segment shining castaneous brown.

Length: Body 4.5 mm, wing 4.3 mm.

Material examined.— One male (May 8) and one female (May 15) collected on Amami-Oshima Is. They are conspicuously larger than the Formosan species.

Distribution.—Amami-Oshima Is., Formosa, Burma, Java, Singapore, Amboina, India.

Hendelina superfluctа (Enderlein)

Plate 15

Trypeta superfluctа Enderlein, 1911, p. 428, fig. J.
Pseudospheniscus superfluctus (Enderlein).— Shiraki, 1933, p. 168.

Brownish black to black, with head and front legs ochraceous, of small size, distinguished by the wing-pattern.

Male.—Head very slightly narrower than thorax, as wide as latter, 1.75 times as wide as long, or 1.54 times as high as long. Frons (pl. 15, fig. 3) hardly elevated above eye-margins, conspicuously narrower than eye, parallel-sided, moderately whitish tomentose on lateral portions, very sparse, minute, blackish pubescent on median portion; vertical calli conspicuously long, more or less pale and slightly shining; lunule comparatively large, a little shorter than wide, colored as frons, slightly concave in middle; ocellar triangle ill defined, more or less darkened, a rather distinct transverse carina extending to roots of inner verticals. Face (pl. 15, fig. 4) rather narrow, slightly longer than wide, with straight lateral margins, obscured by a whitish tomentum, with narrow, shallow antennal grooves which are more or less darkened and attain oral margin; orbits ochraceous, moderately wide, slightly broadened below, with blackish pubescence; vibrissal margin with blackish sparse short setae along entire length; epistoma rather broad, more or less whitish tomentose. Back of head (pl. 15, fig. 2) ochraceous, slightly swollen on lower portion, upper half distinctly hollowed; cheeks narrow, somewhat whitish yellow, with an inconspicuous genal groove, lower margin with a row of short black bristly hairs and on the posterior portion some longer ones. Eye in profile wider than half its length, posterior margin slightly and anterior margin conspicuously convex, inferior angle broadly and superior angle somewhat narrowly rounded. All bristles black: fronto-orbitals 2:3, the inferior pairs crossing, the lowest one distinctly shorter than others but nearly as

Hendelina superflucta (Enderlein)

Male. 1, left wing; 2, head, in profile; 3, head, from above; 4, head, from front; 5, thorax, from above; 6, thorax, from side; 8, abdomen, from above; 9, right antenna; 10, left palpus; 11, left foreleg; 12, left midleg; 13, left hindleg. Female. 7, abdomen, from above.

long as upper superior, the two upper pairs a little longer than lowest superiors; inner verticals longest and strongest, parallel; postverticals parallel, distinctly shorter than ocellars that are nearly parallel and slender, but longer than upper superior fronto-orbital, behind each inner vertical one bristle (occipital) on level of postverticals; bristles of occipital row scattered; genal bristles sometimes two. Antennae (pl. 15, fig. 9) light yellow, distinctly shorter than face; second segment a little shorter than one-half the third segment, with distinct median bristle; third segment nearly 1/2 as wide as long, same width throughout with rounded apex, the dorsal margin with a whitish minute pubescence; arista conspicuously longer than antenna, short plumose. Palpi (pl. 15, fig. 10) whitish yellow, very broad, wider than half the length, sparsely black bristled.

Thorax purplish black, nearly 4/5 as wide as long, a little longer than high. Mesonotum (pl. 15, fig. 5) as long as wide, quardate, obscured by a yellowish-grey tomentum, covered with black minute pubescense, sometimes with a pair of inconspicuous very fine submedium stripes on prozona; humeral calli comparatively small, shining castaneous, lower half often yellowish with erect blackish pubescence; notopleural calli more or less shining, sometimes brownish black at inner margin; scutellum distinctly pubescent, longer than one-fourth mesonotum, nearly 1/2 as long as wide, the disk flat with rather well-defined pale lateral carinae, lateral borders nearly perpendicular. Pleura (pl. 15, fig. 6) shining, almost entirely bare but with very sparse black erect pubescence, prothorax castaneous, wing-base brownish black, sternopleuron with blackish sparse bristly hairs along ventral margin. All bristles black: inner scapulars a little shorter than outers, parallel; humerals about at middle of callus, slightly longer than presuturals, or as long as anterior notopleurals; posterior notopleurals distinctly shorter than anterior; dorsocentrals distinctly posterior to level of anterior supra-alars, nearly as long as latter; prescutellars very slightly before a line connecting inner posterior supra-alars, as long as dorsocentrals; apical scutellars conspicuously shorter than basal, often crossing; mesopleurals two, pteropleural bristle directed posterodorsally, sternopleurals directed dorsally, all nearly the same length.

Abdomen (pl. 15, fig. 8) nearly as long as thorax, slightly broader, shining, yellowish grey dusted except the fifth tergum, blackish pubescent; the second tergum with blackish erect long pubescence on lateral portions, marginal bristly hairs of terga comparatively long, especially on last two terga, apical margin of the fifth tergum with two or three pairs of very long bristles; genitalia comparatively large, castaneous, basal segment with blackish long hairs, dorsal appendages conspicuously larger than the ventral, which are slender and spinelike; venter uniformly black and shining.

Wings (pl. 15, fig. 1) a little shorter than body, twice as long as wide; costal vein attaining end of m, costal spine distinctly shorter than basal bristle; R_1 strongly bent anteriorly at apex; R_{2+3} and R_{4+5} more or less undulate, the latter bristled from base to beyond r-m, which is perpendicular beyond middle of $1M_2$; m very slightly divergent from R_{4+5}; m-cu straight, almost perpendicular; pterostigma very short, nearly half as long as second costal cell; anal cell conspicuously shorter than basal cell, with short inferior prolongation. Brownish black, with the alulae and anal lobe hyaline and with six hyaline markings as follows: a very small spot at base of R_1, which hardly connects with basal oblique band in Cu; a single triangular indentation at costal border, just beyond pterostigma, attaining R_{4+5}; a straight median cross band from costa to posterior margin of $1M_2$, which is slightly narrowed posteriorly; a straight apical band from above R_{4+5} to tip of m, gradually broadened posteriorly; a very large subapical triangular spot just below middle of apical section of R_{4+5} to apical margin of $2M_2$, almost filling $2M_2$; a straight, oblique basal band from apico-inferior margin of M to end of anal vein, a little broadened apically. Haltere blackish brown, the stalk light yellowish brown.

Legs ochraceous, blackish pubescent, the femora of two posterior pairs blackish brown, moderate in length. Foreleg (pl. 15, fig. 11) conspicuously shorter than others; femur more or less darkened on the external surface, conspicuously longer than tibia, externodorsal surface with two rows of black bristly hairs, externoventral margin with one row of approximately six black long bristly hairs; tibia nearly 4/5 as long as femur, longer than tarsus; first tarsal segment as long as the four following segments together, longer than half the tibia, brushlike bristles on internoventral surface somewhat yellowish and long. Midleg (pl. 15, fig. 12) very slightly longer than hindleg; femora nearly as long as tibia, with two rows of black bristly hairs on ventral and external surfaces; tibiae with two distinct apical spurs, of which one at ventral apex is conspicuously long, the other on external apex nearly 1/2 as long as former, in addition one or two very short bristles on external apex; tarsi nearly as long as the tibia, the first segment distinctly longer than the four following segments together, the brushlike bristles on internoventral surface yellowish brown and some-

what sparse, the second to fourth segments almost always with two black spinelike bristles on ventral apex. Hindleg (pl. 15, fig. 13): femur a little longer than tibia, near dorsal apex with one pair of black long bristly hairs, ventral margins with more or less distinct bristly hairs; tibia as long as tarsus, externo-dorsal surface with one row of at least six black bristly hairs; the first tarsal segment distinctly longer than the four following segments together, pubescence on dorsal surface comparatively long, brushlike bristles on internoventral surface sparse and long.

Length: Body 3.8–4 mm, wing 3–3.4 mm.

Female. Quite similar to male (pl. 15, fig. 7). Third antennal segment more or less narrowed toward apex; sixth abdominal tergum a little shorter than fifth, with three pairs of black long marginal bristles; basal segment of ovipositer shining black, nearly 1/2 as long as basal width, flat, with distinct lateral margins, posterior corner with one long hair.

Length: Body 4–4.2 mm, wing 3.5–4 mm.

Material examined.—Ishigaki Is.: 2 ♀, January 1953, 9 ♂, February 1953; Okinawa Is.: ♀, June 1953, 4 ♂, November 1953.

Distribution.—Formosa, Ryukyu Islands.

Remarks.—Very near to *Euleia caesio* Harris but easily distinguished from it by the blackish costal cells, the conspicuously short pterostigma, and others.

Hendelina nigrescens, new species

Plate 16

Rather large black species, with the basal half of wings blackish except the alulae and the anal lobe. Near *Anomoia alboscutellatus* Wulp, but easily distinguished by the antenna, which has no median bristle on the second segment and a comparatively long third segment, the wings are brownish at the base, the dark scutellum, and many other characters.

Female.—Head as wide as thorax, 1.8 times as wide as long, or 1.1 times as high as long, light yellowish brown. Frons (pl. 16, fig. 3) distinctly narrower than eye, very slightly narrowed anteriorly, with straight lateral margins, more or less elevated above eyes, very slightly tomentose, with a blackish, sparse, erect pubescence on almost entire surface; vertical calli short, nearly 1/3 as long as frons, hardly shining; lunule rather conspicuous, yellow, margined with a brown tint; ocellar triangle comparatively small, blackish, a short transverse carina not extending to inner verticals. Face (pl. 16, fig. 4) nearly 2/3 as long as inferior width, with more or less sinuate lateral margins, nearly flat and straight, somewhat brownish, greyish tomentose, with distinct but shallow antennal grooves attaining oral margin, with distinct vibrissal margins with many very short, irregularly directed, blackish bristly hairs; orbits narrow, slightly widened below, their outer margins rather deeply sulcate, brown, conspicuously broadened at lower angle of eye; epistoma distinct, somewhat paler. Back of head (pl. 16, fig. 2) moderately swollen, upper portion hardly hollowed, broadly brownish around occipital foramen; cheeks low, with distinct genal groove, with some blackish pubescence. Eyes comparatively large, in profile somewhat semicircular, posterior margin nearly straight, broader than half the length, inferior angle broadly rounded, broadest about the middle, quite bare. All bristles black: fronto-orbitals 2:3, the superior strong, the lower pair directed slightly outward and distinctly posteriorly, upper pair parallel and strongly bent posteriorly, the inferior longer than superior, directed anteriorly and crossed; inner verticals strongest, longest and parallel, outer vertical longer than superior fronto-orbital, behind and between inner and outer verticals a short bristle (occipital); ocellar bristles weak, nearly parallel; post-verticals nearly parallel, longer than ocellars; genal bristle distinct. Antennae (pl. 16, fig. 8) inserted nearly at middle of eye, conspicuously shorter than face, ochraceous; second segment nearly 1/3 as long as third, without distinct median bristle; third segment nearly three times as long as wide, narrowed toward the round apex, dorsal margin distinctly minute pubescent; arista comparatively long, plumosely pubescent, black with base light yellow. Palpi (pl. 16, fig. 9) light yellow, black bristled, short and broad, nearly the same width throughout, with round apex.

Thorax as long as abdomen, slightly narrower than latter, black, longer than high. Mesonotum (pl. 16, fig. 5) a little longer than wide, yellowish-grey tomentose, covered with a black, rather depressed, short pubescence, without a light streak; humeral calli light reddish yellow, shining, rather small, with blackish erect pubescence; notopleural calli not conspicuous, upper corners more or less castaneous; scutellum comparatively large, a little longer than half the basal width, disk flat, slightly yellowish-grey tomentose and very fine pubescent, lateral borders nearly perpendicular, with sharp dorsal margins. Pleura (pl. 16, fig. 7) distinctly greyish tomentose, covered with a blackish rather sparse erect pubescence, prothorax and anterior stigma light reddish yellow, sternopleuron with numerous black bristly hairs along ventral surface. All bristles black and long: inner scapulars more or less divergent, a little longer than outers, directed slightly posteriorly; humeral bristle at about middle of callus,

***Hendelina nigrescens*, new species, female**

1, left wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, thorax, from above; 6, thorax, from side; 7, abdomen, from above; 8, left antenna; 9, right palpus; 10, right foreleg; 11, left midleg; 12, left hindleg.

a little longer than anterior notopleural, which is conspicuously longer than posterior, as long as presutural; dorsocentrals conspicuously behind a line connecting anterior supra-alars, which are nearly as long as dorsocentrals; presentellars on the level of inner posterior supra-alars, which are as long as presentellars; apical scutellars parallel, distinctly shorter than basal pair; mesopleurals two, pteropleural directed superoposteriorly, sternopleural directed dorsally, all the same length.

Abdomen (pl. 16, fig. 7) more or less purplish, hardly tomentose, black pubescent, posterior marginal bristles rather short; second tergum with rather numerous erect hairs on lateral borders; sixth tergum a little shorter than preceding, with three pairs of long black marginal bristles; basal segment of ovipositor black, depressed, with lateral marginal carinae, as long as sixth abdominal tergum, second segment castaneous; the venter with coloration similar to that of dorsum.

Wing (pl. 16, fig. 1) shorter than body, nearly twice as long as wide, with apex narrowly rounded; costal vein attaining end of m, costal spine distinct and as long as basal bristle; R_1 gradually curved anteriorly apically; R_{2+3} very slightly undulate; R_{4+5} more or less undulate at basal half of apical section, bristled from base to beyond r-m; m nearly parallel with R_{4+5} apically; r-m conspicuously beyond middle of $1M_2$, straight, nearly perpendicular; m-cu almost straight, not parallel with r-m; pterostigma nearly 2/3 as long as second costal cell, apex pointed; anal cell distinctly shorter than basal cell, but with long inferior prolongation. Basal two-thirds blackish brown, somewhat paler at extreme base, middle third of second costal cell, base of R_1, a triangular indentation just beyond pterostigma, and a rather faint narrow oblique streak from apex of rs to end of anal vein, hyaline; apical third hyaline, with a narrow blackish-brown streak from middle of apex of R_5 to near apex of R_1 along costa, then bent nearly at right angles to tip of Cu. Halteres brownish, with base of stalk yellowish.

Legs moderate in length, blackish pubescent. Foreleg (pl. 16, fig. 10) reddish yellow, conspicuously shorter than other pairs; femora a little longer than tibia, externodorsal margin with one row of black sparse long bristly hairs, apical half of dorsal margin with long black bristly hairs, externoventral margin with one row of about 6 black, very long bristly hairs; tibia as long as tarsus; first tarsal segment as long as four following segments together, yellowish brushlike bristles on internoventral surface conspicuously longer toward base. Midlegs (pl. 16, fig. 11) light brownish yellow, femur black, longest; femur as long as tibia, ventral surface with a distinct longitudinal groove, apical halves of external and internal margins with black short bristly hairs, tibia more or less darkened toward base, with one black apical spur, in addition to two black spurlike bristles on external and one on internal apical margins; tarsus distinctly shorter than tibia, first segment a little longer than the four following segments together, brushlike bristles on internoventral surface rather short and brown. Hindleg (pl. 16, fig. 12): femur slightly longer than tibia, dorsal surface with one pair of long black bristly hairs before apex, externoventral margin with one row of moderately long, black, bristly hairs; tibiae with one row of black bristly hairs along externodorsal margin, ventral apex with one distinct, bristly hair; first tarsal segment distinctly longer than the four following segments together, 1/2 as long as tibia, with yellowish brushlike bristles on internoventral surface.

Length: Body 6 mm, wing 5.5 mm.

Holotype.— Female, Amami-Oshima Is. (NIAS).

Genus *Phagocarpus* Rondani

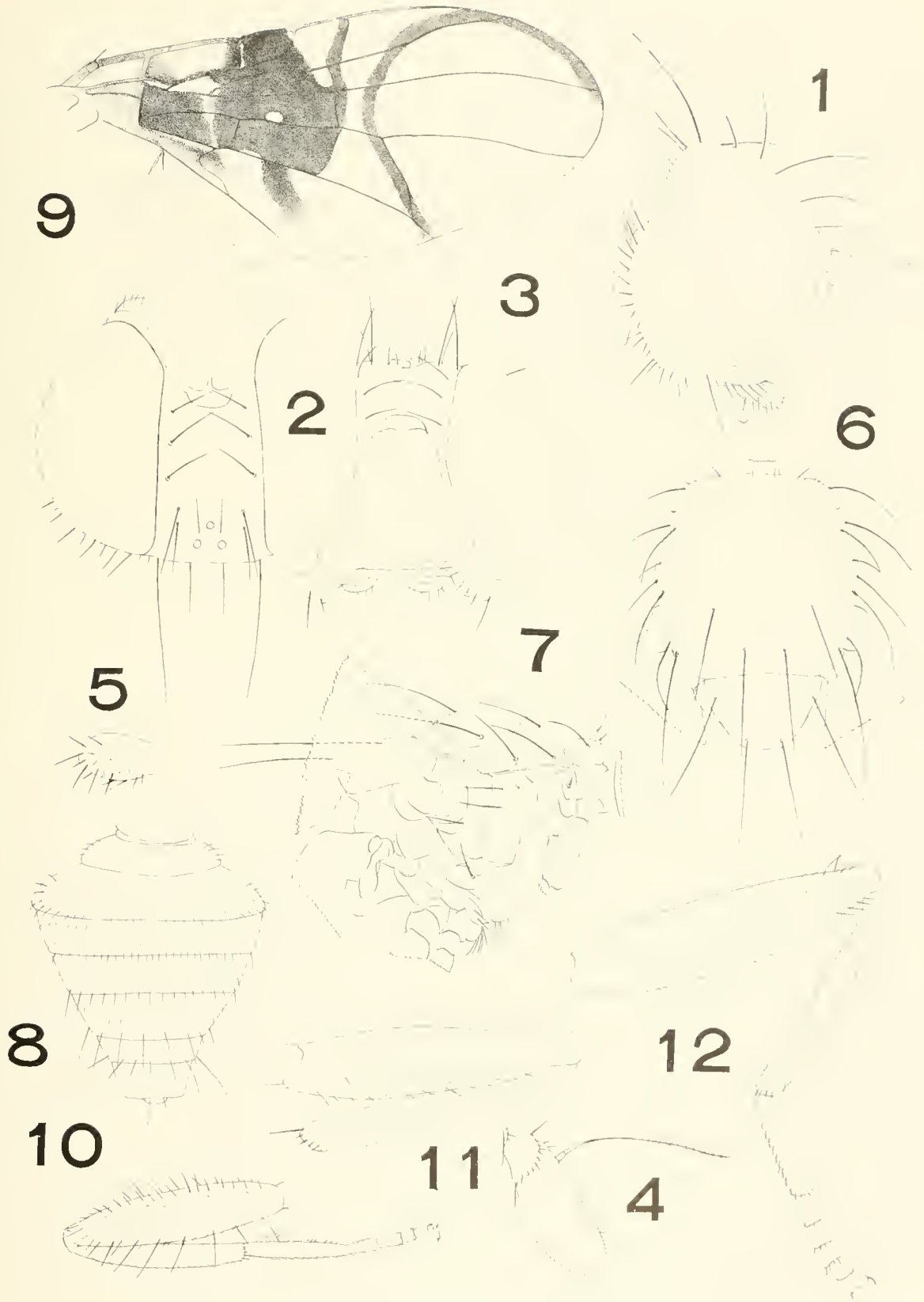
Anomoia Walker (preocc.), 1836, p. 80.
Phagocarpus Rondani, 1871, p. 171.—Shiraki, 1933, p. 182.—Chen, 1948, p. 83.

Phagocarpus okinawaensis, new species

Plate 17

Near *P. formosanus* Shiraki, but easily distinguished by the nonstriped mesonotum, the uniformly colored abdomen, the comparatively short third antennal segment, the basally bore arista, the wing-pattern, and other characters.

Female.— Blackish, legs yellowish. Head narrower than thorax, nearly twice as wide as long, higher than long. Frons (pl. 17, fig. 2) distinctly narrower than one eye, very slightly narrowed anteriorly, with straight lateral margins, flat reddish brown, very slightly white tomentose, very sparsely blackish pubescent at middle, where an ill-defined longitudinal groove extends from tip of black ocellar triangle to nonshining lunule; vertical calli narrow and long, somewhat shining, a distinct transverse carina between lateral ocelli and posterior ends of vertical calli. Face (pl. 17, fig. 3) nearly as long as lower width, brown, moderately whitish tomentose, rather flat but very slightly hollowed at about middle, antennal grooves hardly traceable, orbits very narrow, epistoma very short. Back of head (pl. 17, fig. 1) moderately swollen, brownish black, slightly pale beneath, sparsely black pubescent; cheeks very low, genal groove fine, inferior margin with long black hairs. Eyes comparatively large, with micro-



***Phagocarpus okinawaensis*, new species, female**

1, head, profile; 2, head, from above; 3, head, from front; 4, right antenna; 5, left palpus; 6, thorax, from above; 7, thorax, from side; 8 abdomen, from above; 9, right wing; 10, left foreleg; 11, left midleg without tarsus; 12, left hindleg.

scopic pubescence, in profile, posterior margin slightly curved outward with a broadly rounded lower angle and with a rather narrow upper angle. Antenna (pl. 17, fig. 4) a little shorter than face, longer than twice width, dull yellow; second segment whitish tomentose, with distinct median bristle; third segment a little longer than twice median width, dorsal margin rather straight with distinct short pubescence at about apical two-thirds, ventral margin curved toward rather narrow roundish apex and with similar but sparser pubescence on apical half; arista nearly as long as antenna, with distinct basal segment, blackish, basal portion yellowish, rather long pubescent on apical half. Palpi (pl. 17, fig. 5) very short, hardly twice as long as wide, dirty yellowish, with blackish long bristly hairs on inferior half.

Thorax comparatively large, distinctly longer than abdomen, longer than wide or high. Mesonotum (pl. 17, fig. 6) as wide as long, dull blackish, greyish or brownish-grey tomentose, blackish pubescent, without stripes; humeral calli comparatively small, somewhat yellowish brown, not tomentose but with long black sparse erect pubescence; notopleural calli comparatively large, more or less reddish brown; scutellum 2/3 as long as basal width, dark brown, lateral and posterior rounded margins yellowish brown, disk slightly convex, covered with a yellowish-brown tomentum, slightly shining. Pleura (pl. 17, fig. 7) shining castaneous black, the portion below wing-base reddish brown; sternopleuron with long black bristly hairs at inferoposterior corner; mesopleuron with a very few scattered black hairs of which two along superior margin are distinct; postnotum shining black; mesophragma black, more or less dusted. All bristles black and long: scapulars two pairs; notopleurals two, posterior one conspicuously shorter than anterior; presutural as long as anterior notopleural or humeral; supra-alars 1:2, very long (especially inner post-alars), outer post-alars conspicuously bent at middle; dorsocentrals distinctly behind a line connecting anterior supra-alars; presentellar at level of inner posterior supra-alars; scutellars two pairs, divergent, the apical pair shorter than basal; mesopleurals two, pteropleural and sternopleural one.

Abdomen (pl. 17, fig. 8) black, covered with greyish dust, strongly shining, black pubescent; sixth tergum half as long as preceding, both with long black bristly hairs along posterior margins; ovipositor shining black, short, basal segment nearly twice as long as sixth tergum, with two black bristly hairs on middle of apex. Venter somewhat paler than dorsum.

Wings (pl. 17, fig. 9) clear, nearly as long as the body, longer than twice the width, with brownish-black pattern as follows: basal patch extending a little beyond r-m, but alulae, anal lobe, and first costal cell entirely hyaline, two costal indentations, of which apical is quite triangular and situated just beyond pterostigma, extending to base of r-m, the second one in second costal cell hardly extending to M, but suddenly narrowed and infuscated in R, second section of M with a very small hyaline round spot in R. Hind border of basal patch attaining anal vein, its basal half brownish and apical half hyaline but with a broad brown prolongation not attaining center of anal vein. Brownish black semicircular apical streak beginning at about middle of apex of R_5 on costal margin and R_{2+3}, and attains end of cu along m-cu. Costa not extending beyond end of m, costal spine very short, basal bristle rather long, situated just before middle of first costal cell; apical section of R_{4+5} slightly curved, bristled from base to just beyond r-m; m more or less parallel with R_{4+5}; R_5 somewhat broadened toward apex; r-m nearly perpendicular, very slightly concave, situated conspicuously beyond middle of $1M_2$; m-cu distinctly convex, strongly oblique, lower angle of $1M_2$ therefore pointed; pterostigma approximately half as long as second costal cell; anal cell distinctly shorter than M, the lower angle drawn out into a long point. Halteres rather long, light yellowish.

Legs yellow, blackish pubescent, with the femora of two posterior pairs blackish. Forelegs (pl. 17, fig. 10) conspicuously shorter than two posterior pairs; femur with two rows of black sparse bristles on externodorsal surface and with approximately seven black long bristles on externoventral margin; tibia distinctly shorter than femur or tarsus; first tarsal segment very slightly longer than the four following segments together, internoventral surface with light yellowish dense blunt bristly hairs. Midleg (pl. 17, fig. 11) as long as hindleg; femur nearly as long as tibia, shorter than hindfemur, externoventral margin with long black hairs; tibia distinctly longer than hind tibia, with one blackish apical spur, in addition very short bristles at apical margin. Hindleg (pl. 17, fig. 12): femur with four black long bristly hairs near dorsal apex, black long hairs present at about middle third of externoventral margin, apical externoventral margin with one row of four black short bristly hairs; tibia conspicuously shorter than femur, slightly shorter than midtibia, more or less bent near base; tarsi as in midleg, distinctly shorter than tibia, first segment slightly shorter than the four following segments together, setae on internoventral surface rather sparse.

Length: Body (without ovipositor) 4.2 mm, wing 4 mm.

Holotype.—Female, Okinawa Is., April (NIAS).

***Phagocarpus amamioshimaensis*, new species**

PLATE 18

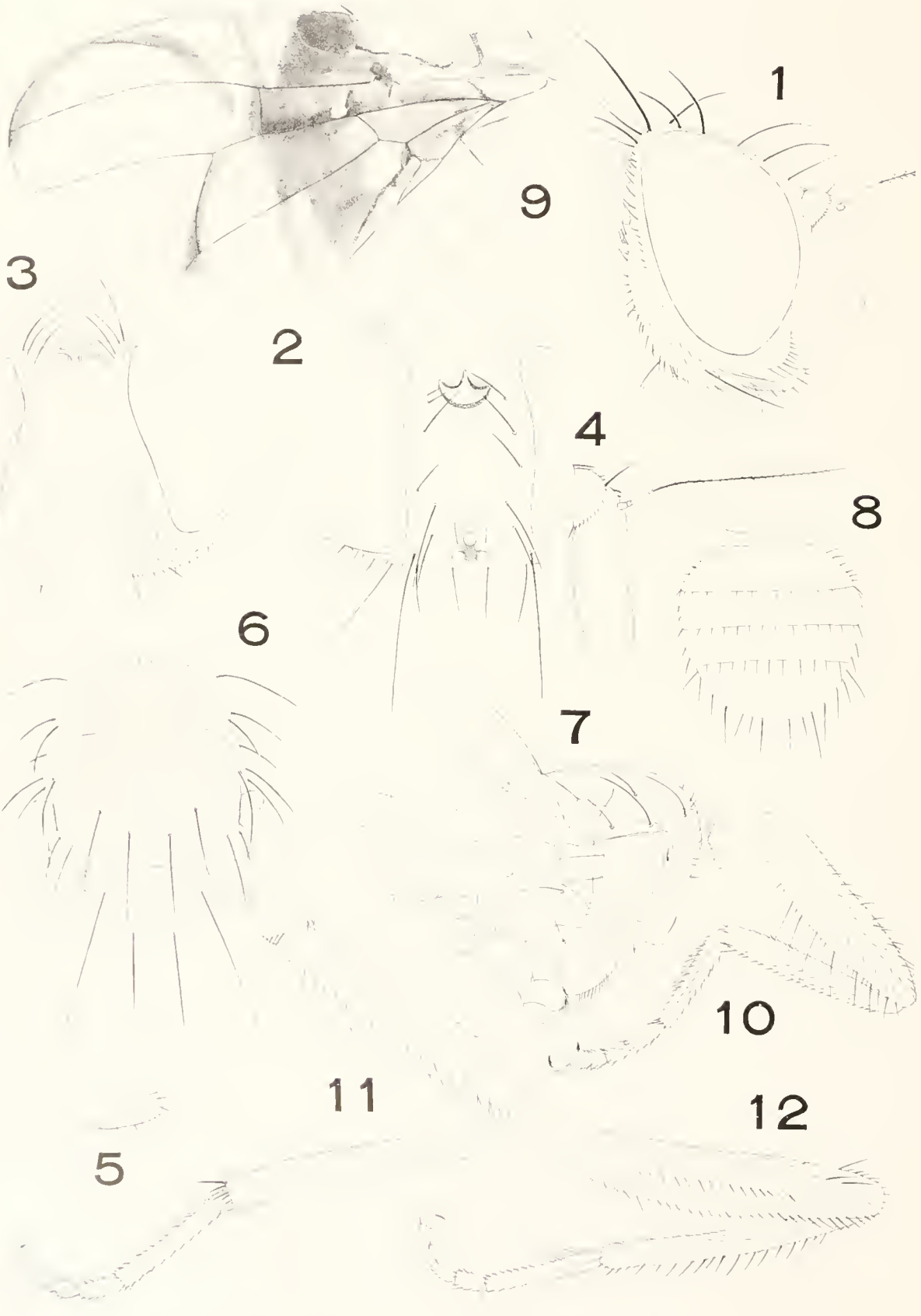
A rather large yellowish-brown species, allied to *P. vulgaris* Shiraki, but easily distinguished by the wing-pattern, the long third antennal segment, and other characters.

MALE.—Head slightly narrower than thorax, 2/3 as long as wide or high. Frons (pl. 18, fig. 2) yellowish brown, hardly whitish tomentose, with black very sparse erect pubescence, nearly parallel-sided, approximately as wide as one eye, nearly 1.5 times as long as wide, rather flat; vertical calli comparatively narrow, somewhat shining; ocellar triangle comparatively small, black, a distinct but short transverse carina between the lateral ocelli and the inner vertical bristles; lunule distinct, more or less paler than frons. Face (pl. 18, fig. 3) whitish tomentose, nearly as long as wide, very slightly and evenly hollowed, with distinct but rather shallow antennal grooves and narrow orbits, lower portion between orbits and antennal grooves with very short, irregularly directed black setae. Back of head (pl. 18, fig. 1) somewhat swollen, light brownish yellow, upper half well hollowed, blackish rather long pubescence on portion around occipital foramen, lower portion with many blackish setae; cheeks rather short, vibrissal margin with many black, comparatively long bristly hairs, genal groove fine. All bristles black: fronto-orbitals 2:3, superiors stronger than inferiors, which are convergent; verticals two pairs, inners straight and nearly twice as long as upper fronto-orbital, which is bent backward strongly; postverticals weak but fairly long, somewhat parallel; the inner occipitals well developed, nearly as long as postvertical, ocellars parallel, weak, somewhat longer than upper superior fronto-orbital; occipital row extending to below middle of eye, composed of rather long bristles; genal bristle long. Antenna (pl. 18, fig. 4) light brownish yellow, a little shorter than face, with distinct median bristle; third segment nearly three times as long as wide, apex round; arista blackish, with basal portion yellow, the black portion distinctly black pubescent. Palpi (pl. 18, fig. 5) yellowish, with many black bristly hairs, approximately twice as long as wide, nearly the same width throughout, with blunt apex.

Thorax distinctly longer than abdomen, but slightly narrower than latter, brownish yellow. Mesonotum (pl. 18, fig. 6) somewhat longer than wide, whitish tomentose and black pubescent, three narrow longitudinal nontomentose streaks (seen from behind), of which median is nearly twice as wide as lateral pair and not quite attaining dorsocentrals, lateral pair extending from inside of humeral calli to near posterior margin through inner ends of sutures; humeral calli with black erect setae on anterior border; notopleural calli almost bare, but not shining; scutellum conspicuously wider than long, flat, with rather distinctly sloped marginal area, slightly paler than mesonotum; mesophragma and postnotum light brownish yellow, the latter with indistinct narrow blackish median longitudinal spot. Pleura (pl. 18, fig. 7) uniformly light brownish yellow, more or less shining; mesopleuron sparsely but distinctly black pubescent; sternopleuron with long black, bristly hairs along ventral border; pteropleuron with one row of black short bristly hairs. All bristles black, long: scapulars two pairs, inner very short, outer longer, behind latter one short bristle; notopleurals two, posterior distinctly shorter than anterior, which is somewhat longer than humeral, as long as presutural; dorsocentrals conspicuously behind a line connecting anterior supra-alars; prescutellar situated at level of inner posterior supra-alars; scutellars two pairs, apical nearly parallel; mesopleurals two, both as long as pteropleural or sternopleural.

Abdomen (pl. 18, fig. 8) nearly round, black pubescent; two basal terga light castaneous, second tergum with yellow posterior border; third tergum castaneous, posterior half yellowish; fourth and fifth terga shining black their posterior margins with one row of sparse long black bristles; genitalia small with yellowish appendages.

Wing (pl. 18, fig. 9) comparatively large, nearly 2/3 as wide as long; costal vein distinctly reaching to end of m, bristles rather short, costal spine conspicuous and as long as basal bristle. Basal patch blackish, yellowish at basal, two-thirds, with six hyaline spots as follows: one very large indentation nearly filling second costal cell, attaining rs; second costal indentation triangular, situated outside the black pterostigma, extending below to anterior end of r-m, a narrow apical transverse band; one very small transverse dot in R, another minute one in basal cell; two transverse bands in basal half of Cu, apical situated near apical margin and basal near base interrupted at about middle; first costal cell and area below it hyaline. Two apical blackish streaks not connected to each other, the anterior, longer one arcuate from near base of R_5 around end of R_{2+3}, along costa to apex of wing, ending at slightly beyond end of R_{1+5}; the other shorter, on m-cu, very slightly curved, anterior end connected with basal patch at posterior end of r-m, and posterior end attaining hind margin. Pterostigma approximately half as long as second costal cell; R_{4+5} distinctly but sparsely bristled from base to just beyond middle of apical



Phagocarpus amamioshimaensis, new species, male

1, head, profile; 2, head, from above; 3, head, from front; 4, right antenna; 5, left palpus; 6, thorax, from above; 7, thorax, from side; 8, abdomen, from above; 9, left wing; 10, right foreleg; 11, left midleg; 12, left hindleg.

section; r-m perpendicular, situated at 2/3 of $1M_2$; m-cu distinctly oblique with acute posterior angle; anal cell distinctly shorter than basal cell (M), but with very long posterior prolongation. Halteres light yellow, with comparatively long stalk.

Legs yellow, with tarsi whitish yellow, black pubescent, comparatively short. Foreleg (pl. 18, fig. 10) conspicuously shorter than posterior pairs; femur distinctly longer than tibia, externodorsal surface with three rows of long bristly hairs, externoventral margin with one row of approximately seven very long bristly hairs; tibia somewhat shorter than tarsus, pubescence more or less longer on dorsal surface, one or two long hairs near apex of dorsal surface; first tarsal segment nearly as long as four following segments together, the yellowish brushlike bristles on internoventral surface rather long. Midleg (pl. 18, fig. 11) longest; femur as long as tibia, ventral surface with two rows of somewhat conspicuous bristly hairs, the apical ones longest, one long hair near base of internoventral margin; tibia with black apical spur, in addition to two shorter black spines on external apical margin, where additional shorter yellowish bristles are situated; first tarsal segment distinctly longer than the four following segments together, less than half as long as tibia, with one row of moderately long sparse blackish bristly hairs and with some spinelike black bristles on apical half of externoventral margin, internoventral surface with yellowish brushlike setae on basal half; second tarsal segment nearly twice as long as following one. Hindleg (pl. 18, fig. 12): femur somewhat longer than tibia, dorsal apex with three long black bristles, externoventral margin with one row of long hairs, of which some at apex are bristly and one near base is conspicuously long, at about middle of external surface one row of black bristly hairs becoming obscure apically; tibia with one row of long black sparse bristles on externodorsal margin; first tarsal segment conspicuously shorter than half the length of tibia, slightly longer than the four following segments together, the bristles and setae of all tarsal segments as on midtarsus.

Length: Body 6 mm, wing 5.5 mm.

Holotype.—Male, Mt. Yuwan, Amami-Oshima Is., May 3, collected by Mr. S. Iha (NIAS).

Genus *Acrotaeniostola* Hendel

Acrotaeniostola Hendel, 1914, p. 80; 1915, p. 436.—Shiraki, 1933, p. 145.

Acrotaeniostola antennata, new species

Plate 19

Closely allied to *A. flavoscutellata* Shiraki, but easily distinguished by the third antennal segment, which has an undulate dorsal margin and two genal bristles.

Male.—Head nearly as wide as thorax, 1.6 times as wide as long, 1.4 times as wide as high, somewhat transverse-oblong. Frons (pl. 19, fig. 3) nearly as wide as one eye, parallel-sided, very slightly elevated above eyes, yellowish brown or reddish brown, sometimes with an ill-defined dark median stripe, middle portion with very few black short erect hairs; vertical calli sometimes brown, shining, very long and well elevated, reaching to about middle of frons; lunule very narrow, slightly shining; ocellar triangle blackish brown, no distinct transverse carina. Face (pl. 19, fig. 4) waxy greyish white, more or less obscured by a whitish tomentum, slightly concave, distinctly shorter than wide, with straight lateral margins; orbits yellowish, whitish tomentose, narrow but well defined, parallel-sided; antennal grooves moderate in depth, their outer slopes yellowish; vibrissal margin with three or four short, black, inwardly directed bristles and several longer, downwardly-directed bristles. Back of head (pl. 19, fig. 2) swollen, the upper half blackish brown with occiput more or less yellowish, somewhat obscured by whitish tomentum, lower half yellowish with a very sparse black pubescence becoming longer and bristly toward inferior surface; cheeks very narrow, with long black bristly hairs on inferior border. Eyes quite bare, in profile moderately oblique, 2/3 as wide as long, with moderately convex posterior margin, and slightly narrowed, round inferior angle. Antenna (pl. 19, fig. 5) inserted at about middle of eye, a little shorter than face; first segment very short, pale yellowish; second segment comparatively large, dirty yellow, without distinct median bristle, ventral corner with rather long black bristles; third segment 2.6 times as long as second, 3.2 times as long as wide, gradually narrowed toward somewhat pointed apex and bent dorsally at apical third, dorsal margin more or less undulate beyond middle; arista black with basal portion light yellow, sparsely plumose. Palpi (pl. 19, fig. 6) light yellow, narrow and straight, with comparatively long black bristly hairs on inferior border, tip rounded. All bristles black: fronto-orbitals 2 : 3, the superior pair directed slightly outward, lower longest of all fronto-orbitals, inferior pair more or less crossing and shorter than superior; ocellars comparatively long, divergent; inner verticals longest, directed slightly inward, outer longer than the upper superior fronto-orbital; postverticals parallel, comparatively long, a little shorter than upper superior fronto-orbital, a distinct bristle (inner occipital) directed inward between and behind latter and postvertical; bristles of occipital row extending to below middle of eye, composed of long bristles.

Thorax 1.3 times as long as wide, oblong. Mesonotum (pl. 19, fig. 7) as long as wide, blackish brown, with lateral borders somewhat yellowish, more or less obscured by whitish tomentum, with light yellow short pubescence; humeral calli light yellow, more or less shining, with a few yellowish long erect pubescence on externo-anterior border; notopleural calli comparatively large, yellowish brown, sometimes darkened, slightly obscured by whitish tomentum; scutellum nearly three times as wide as long, light ivory yellowish with basal margin more or less brown, posterior margin rounded; mesophragma and postnotum concolorous with mesonotum. Pleura (pl. 19, fig. 8) conspicuously paler than notum, antero-inferior border yellowish, posterior border of mesopleuron sometimes whitish, with light colored, very sparse, erect fine hairs, ventral border of sternopleuron with black bristly hairs. All bristles black: scapulars fine, comparatively long, inner pair as long as outer and situated closely to each other; humerals as long as presuturals, situated at middle of callus; notopleurals a little shorter than humerals, the anterior slightly longer and finer than posterior; dorsocentrals on a line connecting anterior supra-alars; presentellars at the level of inner posterior supra-alars, distinctly shorter than latter; outer posterior supra-alars conspicuously curved, shorter than inner; scutellars two pairs, the apical parallel but slightly curved inward; mesopleurals two, between them sometimes one short, fine bristle; pteropleural directed posteriorly; sternopleural directed dorsally.

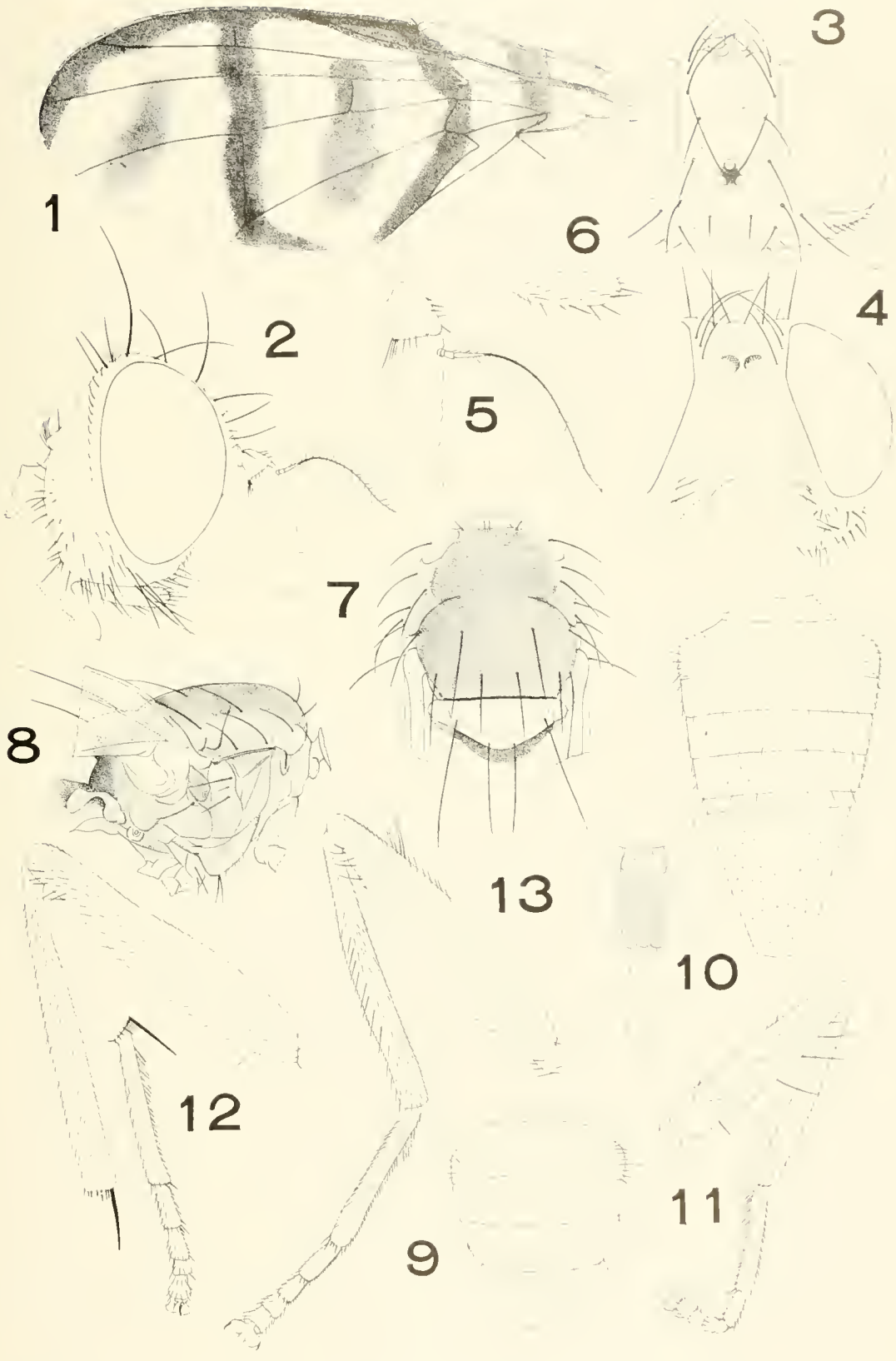
Abdomen (pl. 19, fig. 9) nearly as long and as wide as thorax, black, more or less obscured by greyish-white tomentum except fifth tergum, which is blackish pubescent; second tergum with long erect hairs on lateral borders, third to fourth terga with very sparse bristly hairs along posterior margins; genitalia yellow; sterna yellowish brown to reddish brown, often with a narrow paler posterior marginal band.

Wing (pl. 19, fig. 1) comparatively large, distinctly longer than body; costal vein almost attaining middle of apex of R_5, with comparatively short costal spine which is not distinctly longer than costal bristles; R_{2+3} nearly straight, a veinlet, which is often obsolete, beyond its middle in R_1; R_{4+5} sparsely bristled from base to before tip, a very short veinlet proximal to middle of R_5; m slightly divergent from R_{4+5}; r-m not oblique, situated at middle of $1M_2$; m-cu straight, nearly perpendicular, $1M_2$ with moderately sharp posterior angle; pterostigma slightly shorter than second costal cell; the apex sharp, light yellowish; anal cell shorter than basal cell, but with a very long inferior prolongation nearly as long as cell proper. Wing-pattern brown, as follows: costal band narrow from base of pterostigma to middle of apex of R_5 along costa, its posterior margin more or less notched at R_{2+3} and R_{4+5}; five distinct transverse bands, the basal straight from basal third of second costal cell to base of anal cell, subbasal from base of pterostigma to end of anal vein along apical portion of M and anterior border of apical margin of anal cell, median from R_{2+3} to below cu along r-m, subapical from middle of apex of R_1 to end of cu on m-cu, then bent to middle of apex of Cu along wing-margin, apical usually faint, from R_{4+5} to near apex of $2M_2$. Halteres light yellowish.

Legs light yellow with paler tarsi and front tibiae, brown pubescent. Foreleg (pl. 19, fig. 11) conspicuously shorter than others; femur slightly longer than tibia, externodorsal margin with one row of four or five black bristly hairs on apical half, external surface with one row of six or seven black bristly hairs near middle, externoventral margin with one row of seven black long bristly hairs, of which the two basal are slender and two apical are short; tibia as long as tarsus, pubescence on dorsal margin somewhat longer; first tarsal segment as long as four following segments together, half as long as tibia, brushlike bristles on internoventral surface brown and moderately dense, black bristles on ventral surface of four apical segments rather sparse. Midleg (pl. 19, fig. 12) somewhat longer than hindleg; femur as long as tibia, externoventral surface more or less brownish on apical two-thirds, externoventral margin with a conspicuously long hair near base and bristly hairs near apex; tibiae with a strong and long apical spur, in addition very short bristles along apical margin; tarsi a little shorter than tibia, first segment longer than the four following segments together, brushlike bristles on internoventral surface rather sparse, black short bristles on ventral surface of four apical segments very small and numerous. Hindleg (pl. 19, fig. 13) with apical half of femur and sometimes a spot just before middle of tibia brownish; femur distinctly longer than tibia, bristly hairs, of which two are conspicuously long, well proximad of apex of dorsal surface, externoventral margin with three long hairs near base and bristly hairs near apex; tibia with one row of bristles, on external surface, these becoming short and faint toward both ends; first tarsal segment a little longer than half tibia, longer than the four following segments together, bristles as in midtarsus.

Length: Body 4–5 mm, wing 4.2–5.3 mm.

Female.—Quite similar to male. Third antennal segment somewhat broader, the dorsal margin less undulate and ventral margin strongly curved at apical portion; arista rather irregularly plumose. Palpi comparatively broad, with truncate apex. Sixth abdominal tergum (pl. 19, fig. 10) less than half as



Acrotaeniostola antennata, new species

Male: 1, left wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, right antenna; 6, right palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, right foreleg; 12, right midleg; 13, right hindleg. Female: 10, abdomen, from above.

long as fifth; basal segment of ovipositor nearly 2/3 as long as abdomen, very broad, flat, with lateral margins distinctly carinate, very fine pubescent, strongly shining castaneous brown, the second segment paler and cylindrical.

Length: Body 4–5 mm, wing 5.2–6.2 mm.

Types.—Holotype, ♂, USNM 69376; paratypes, 32 ♂, 28 ♀ (BMH and NIAS); all from Okinawa Is., March, April, June, 1953.

The present species might be a local variety of *A. flavoscutellata* Shiraki (1933, p. 149, fig. 34, pl. 4, fig. 2).

Genus *Taeniostola* Bezzi

Taeniostola Bezzi, 1913, p. 119.—Shiraki, 1933, p. 139.

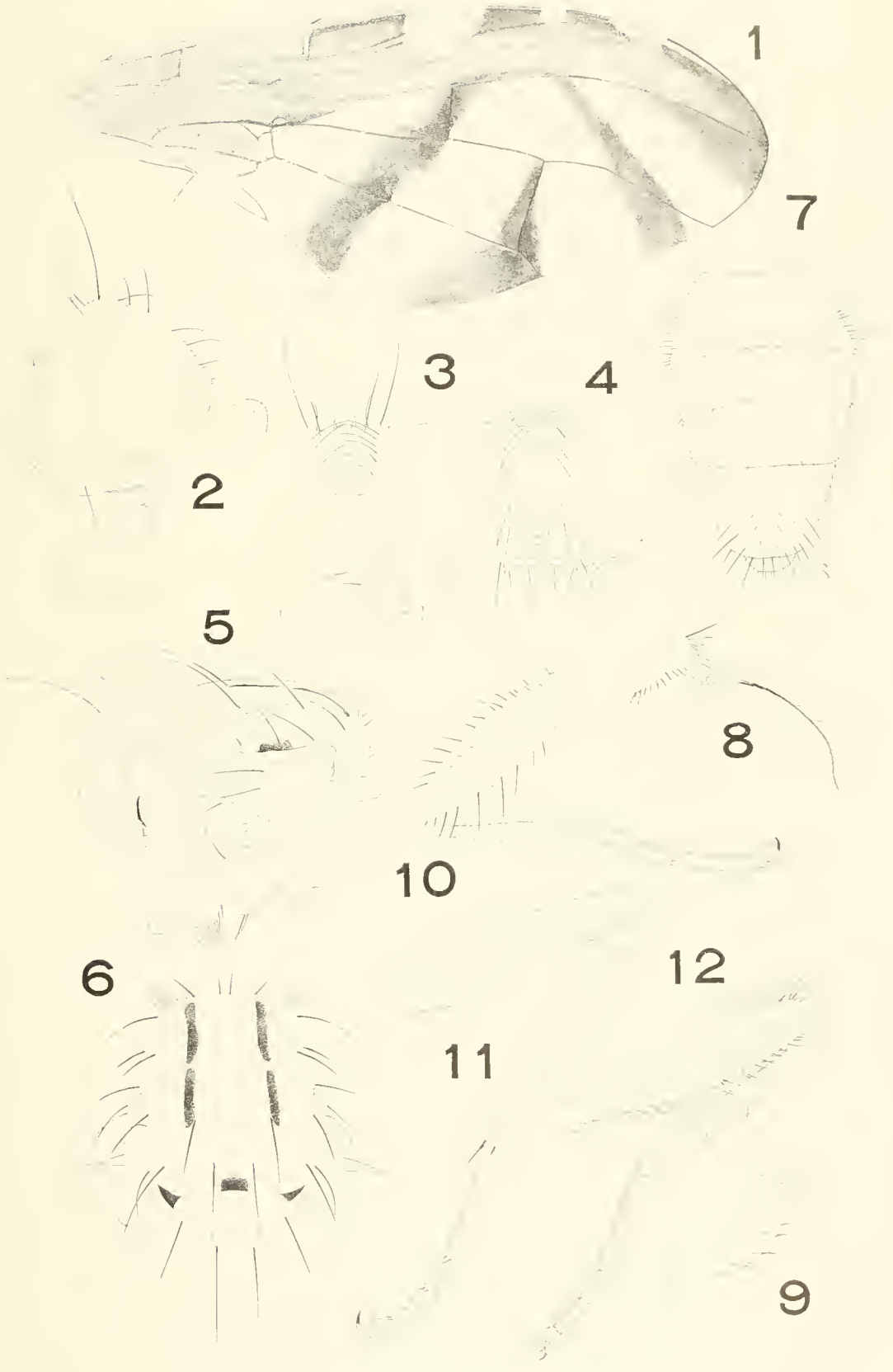
Taeniostola tripunctata, new species

Plate 20

A large light yellow species allied to *T. limbata* Hendel from Formosa, but at once distinguished from it by the parallel-sided frons, the three or more inferior fronto-orbital bristles, the comparatively long mesonotum, which has one pair of black longitudinal stripes and three distinct black spots along the posterior margin, and the comparatively narrow wings.

Male.—Head as wide as thorax, 1.4 times as wide as long, nearly as long as high. Frons (pl. 20, fig. 4) yellow, orbits more or less whitish tomentose, an ill-defined small brownish-yellow spot at middle of anterior half, with very sparse brown pubescence, almost flat, as wide as one eye, parallel-sided with straight lateral margins; vertical calli distinctly shining, narrow and long, not attaining middle of frons; lunule rather narrow, shining, with brownish upper margin, this color extending nearly to oral margin along inner edges of facio-orbits; ocellar triangle small, blackish brown, a distinct shining transverse carina. Face (pl. 20, fig. 3) nearly as high as wide, not hollowed, distinctly covered by whitish tomentum, with a rather distinct straight median longitudinal carina broadened below and very shortly produced forward toward the oral margin; antennal grooves broad, conspicuous, distinctly extending to oral margin; orbits distinct, narrowed at about middle, inner margins sharp; vibrissal edge more or less with some very fine pubescence. Back of head (pl. 20, fig. 2) strongly swollen, upper portion flat with very sparse yellow pubescence; occiput with very fine brownish lateral margins; cheeks strongly swollen, wider than 1/5 the eye height, a broad, very shallow genal groove, with short black pubescence above the genal bristle. All bristles black, comparatively weak; fronto-orbitals 2:3 or 4, superiors stronger than inferiors, upper conspicuously shorter than lower, inferior directed inward or distinctly crossing; ocellars fine, rather long, more or less divergent; inner verticals strongest and longest, more than twice as long as outer; postverticals almost parallel, slightly shorter than outer verticals, a short bristle (occipital) behind the inner verticals; genal bristle nearly as long as ocellar, somewhat stronger. Antennae (pl. 20, fig. 8) light yellow, shorter than face, inserted at a point just below middle of eye; second segment nearly 2/5 as long as third, with a distinct black median bristle, apical margin with one row of numerous brown bristly hairs; third segment more than twice as long as wide, gradually and distinctly narrowed toward a round apex, dorsal margin concave, with a whitish minute pubescence; arista black with basal segments yellowish, short-plumose. Palpi (pl. 20, fig. 9) light yellow, comparatively long, 2.5 times as long as wide, conspicuously narrowed at base, dorsal margin nearly straight, ventral margin strongly convex, apex rounded, with rather long sparse bristly hairs on ventral half.

Thorax light yellow, shining, more than twice as long as wide, slightly longer than high. Mesonotum (pl. 20, fig. 6) slightly longer than wide, somewhat white tomentose, covered by a yellowish depressed pubescence intermixed with brown oblique pubescence, one pair of black narrow longitudinal streaks from inner corners of humeral calli to roots of dorsocentrals interrupted at inner ends of sutures, posterior margin with three conspicuous black spots; humeral calli with brownish bristly hairs on anterior border; notopleural calli more or less brownish; scutellum about twice as wide as long, disk rounded, without marginal carinae, lateral borders perpendicular. Pleura (pl. 20, fig. 5) paler than notum, nearly bare, with very sparse brown rather erect pubescence; prothorax with long yellowish pubescence, without bristle; sternopleuron with rather numerous long brown hairs on lower border and with two black long bristly hairs at posterior corner; metapleuron with a black spot just above root of haltere; mesophragma concolorous with scutellum; postnotum sometimes more or less reddish yellow, with a brownish median longitudinal stripe on one specimen. All bristles black: inner scapulars parallel or hardly divergent, slightly weaker than outer pair; humerals, notopleurals, and presuturals nearly the same length, but posterior notopleurals more or less shorter; dorsocentrals situated just behind level of anterior supra-alars, slightly shorter than prescutellars, the latter situated on a line connecting inner posterior supra-alars, which are longer than remaining supra-alars; apical scutellar pair almost always parallel, but their tips more or less directed inward, distinctly shorter than basal pair, which is as



Taeniostola tripunctata, new species, male

1, right wing; 2, head, profile; 3, head, from front; 4, head, from above; 5, thorax, from side; 6, thorax, from above; 7, abdomen, from above; 8, right antenna; 9, right palpus; 10, left foreleg; 11, left midleg; 12, left hindleg.

long as inner posterior supra-alars; mesopleurals 2, pteropleural bristle longer than mesopleurals and directed posteriorly, sternopleural one, directed dorsally and stronger than mesopleurals.

Abdomen (pl. 20, fig. 7) distinctly shorter than head and thorax combined, slender, nearly as wide as thorax, less than twice as long as wide, gradually narrowed toward the round apex, reddish yellow, obscured by yellowish-grey tomentum and brownish depressed pubescence, but marginal setae erect and black; second tergum slightly shorter than fifth, lateral borders with many black long erect somewhat bristly hairs; fifth tergum with a deep black narrow posterior marginal band having many long black erect bristly hairs on apical half; genitalia conspicuous, castaneous, with posterior half deep black, yellowish dorsal appendages long and broad, ventral appendages castaneous and spinelike.

Wing (pl. 20, fig. 1) nearly as long as body, 2.3 times as long as wide; costal vein distinctly reaching to end of m, costal spine distinctly shorter than basal bristle; R_1 moderately curved toward costa, forming a sharply pointed pterostigma; R_{2+3} not undulate, nearly straight; R_{4+5} distinctly curved in apical section, parallel with m, densely bristled from base to before middle of apical section; r-m distinctly beyond middle of $1M_2$, straight and perpendicular; m-cu straight, not parallel with r-m, less than twice as long as latter; pterostigma a little shorter than second costal cell; anal cell shorter than basal cell, but with a long sharp-pointed inferior prolongation. Hyaline, with a light yellow broad costal band from entire base to upper half of apex of R_5, occupying basal cell and almost all of R_3, but with three costal indentations in R_1, of which the first at tip of R_1 is very large with round posterior margin extending just below the middle of R_1, second in middle of apex of R_1 quadrate and smallest, and third on apex of R_1; costal band brownish on costal border of pterostigma, which is the portion between costal indentations and apical portion; three radiate bands almost entirely brown, the first from r-m to apical half of anal vein, obliquely straight, second from base of m-cu to wing margin, then bent along margin toward a point beyond middle of mouth of Cu, this ray not connected with costal band, third (subapical band) from proximad of middle of apical section of R_{4+5} to near apex of $2M_2$, straight and distinctly narrowed toward its base. Halteres orange yellow, comparatively small, but with long stalk.

Legs moderate in length, light yellow, covered with a brownish minute pubescence. Foreleg (pl. 20, fig. 10) shortest; femur longer than tibia, with 6–8 long black bristly hairs along externoventral margin, and 12–14 shorter black bristly hairs on dorsal surface; tibia nearly as long as tarsus, setae along two ventral margins stronger and darker than others; first tarsal segment distinctly shorter than the four following segments together, brushlike bristles on internoventral surface brown and weak. Midleg (pl. 20, fig. 11) longer than hindleg; femur as long as tibia, pubescence on external surface darker and longer than on internal surface, distinctly longer on ventral margins, more or less bristly on the apical venter; tibia conspicuously longer than tarsus, apical spur black and long but weak, at apex in addition many brownish short bristles, of which two or three are black; first tarsal segment as long as the four following segments together, brushlike bristles on internoventral surface as on foreleg, second to fifth segments with two rows of black short spinelike bristles on venter. Hindleg (pl. 20, fig. 12): femur distinctly longer than tibia, apical one-third of dorsal surface with many long black bristly hairs, each of the two ventral margins with a row of many black short bristly hairs; tibiae more or less broadened at middle third, where there is one row of 7–9 black short bristly hairs on external surface; tarsi conspicuously shorter than tibia, segments gradually shortened apically, first segment shorter than half as long as tibia, longer than the four following segments together, bristled as in midleg.

Length: Body 8–8.2 mm, wing 7–8 mm.

Types.—Holotype, ♂, USNM 69377; paratypes, 3♂ (BMH and NIAS).

Genus *Paratrirhithrum* Shiraki

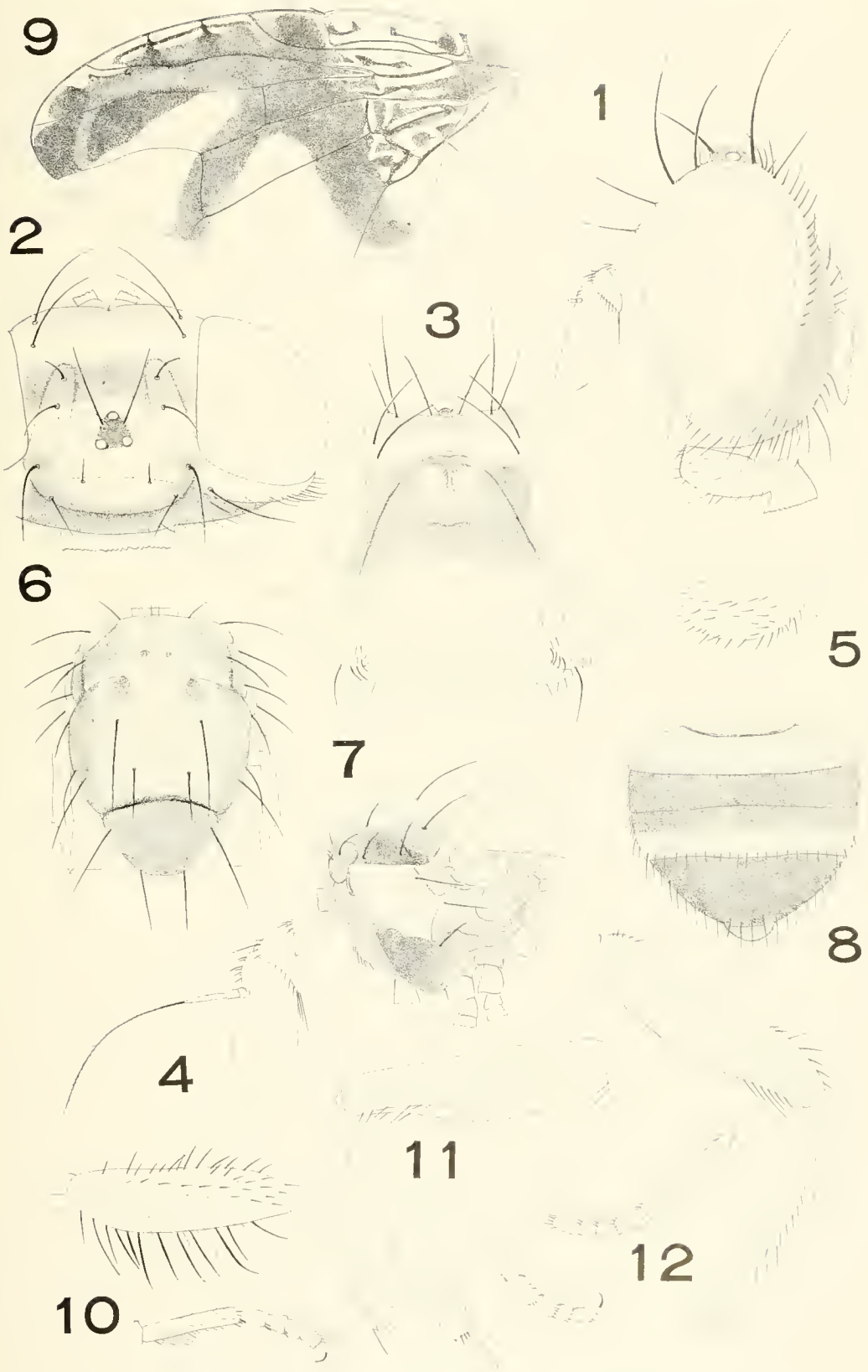
Paratrirhithrum Shiraki, 1933, p. 137.

Paratrirhithrum amamioshimaensis, new species

Plate 21

A small to medium-sized, shining black species, allied to *P. nitobei* Shiraki, but distinguished by two inferior fronto-orbital bristles and the comparatively long third antennal segment.

Male.—Head as broad as thorax, narrower than twice the length, 1.3 times as high as long. Frons (pl. 21, fig. 2) dirty yellow, with a broad brownish to blackish-brown median transverse band just above middle, distinctly broader than one eye, slightly widened apically, with straight lateral margins; vertical calli rather large and distinct, attaining middle of frons and directed somewhat inward; lunule very small, distinctly sunken, brownish, upper portion with an ill-defined brown to blackish-brown transverse band; ocellar triangle comparatively small, black. Face (pl. 21,



Paratrirhithrum amamioshimaensis, new species, male

1, head, profile; 2, head, from above; 3, head, from front; 4, left antenna; 5, left palpus; 6, thorax, from above; 7, thorax, from side; 8, abdomen, from above; 9, left wing; 10, right foreleg; 11, right midleg; 12, right hindleg.

fig. 3) slightly broader than long, with straight lateral margins, upper half brown, remainder whitish yellow; orbits well defined with fine blackish lines, rather narrow; antennal grooves shallow and short, below each a distinct narrow longitudinal sulcus with minute hairs; moderately hollowed in profile. Back of head (pl. 21, fig. 1) brown to blackish, pale brown to pale reddish yellow toward lower border, rather moderately swollen; cheeks somewhat brownish, strongly developed, but with nearly straight lower margin, vibrissal edge with black bristles, inferoposterior portion with black hairs intermixed with long bristly hairs, the posteriormost conspicuously long, about as long as genal bristle. Eyes black, in profile nearly 1.4 times as long as wide, lower angle distinctly narrowed. Antennae (pl. 21, fig. 4) short, brownish yellow; first segment very short, a few black short bristles on dorso-apical border; second segment nearly triangular, with median bristle, lower apical corner with several black long bristles; third segment nearly 2.5 times as long as wide, narrowed toward round apex, with rather straight dorsal margin; arista distinctly longer than antenna, black with basal portion light yellow, short pubescent throughout. Palpi (pl. 21, fig. 5) comparatively large, dirty yellow to light yellow, twice as long as median width, dorsal margin almost straight, ventral margin strongly curved, with many black bristles. All bristles black, rather strong; ocellars longer than inferior fronto-orbitals, divergent and moderately curved below; postverticals very short, spaced widely apart, parallel, directed forward; inner verticals longest, nearly parallel, their apices directed slightly inward, outer verticals about as strong as upper superior fronto-orbital directed outward, 2:2, superior two posteromedially to it a short bristle (inner occipital) distinctly isolated from occipital row, fronto-orbitals directed posteriorly, lower one of which is very strong, inferior two pairs rather weak, directed slightly inward; bristles of occipital row conspicuous, extending to a point below middle of eye.

Thorax slightly longer than abdomen, rounded, strongly swollen above. Mesonotum (pl. 21, fig. 6) as long as wide, shining black, obscured by a grey tomentum and a yellowish pubescence, broad marginal borders, one pair round spots situated just inside ends of sutures, two roundish prolongations of the tomentose area between the humeral calli; humeral calli rather small, brownish yellow, furnished with long sparse yellowish hairs; scutellum large, swollen, with round apex, shining black, disk with black erect hairs. Pleura (pl. 21, fig. 7) light castaneous, mesopleuron yellowish white and sparsely covered with yellowish erect hairs, anterior inferior margins reddish brown, ptero- and metapleuron grey tomentose; postnotum distinctly whitish tomentose, transverse-bandlike shape. All bristles black, strong; scapulars 2 pairs, inner pair rather close together, parallel, and directed very slightly posteriorly, outer pair somewhat weaker than inner; humerals at about middle of calli, nearly as long as anterior notopleural, almost always curved posteriorly, parallel with the latter; presuturals very much stronger than notopleurals, of which the posterior is weaker than anterior; supra-alars 1:2, the posterior longest; dorsocentrals just behind a line connecting anterior supra-alars; prescutellars as long as dorsocentrals; scutellars 2 pairs, the apical directed slightly inward; meso-, ptero-, and sternopleurals well developed, each 1.

Abdomen (pl. 21, fig. 8) much broader than thorax, rather round, shining black, with two broad conspicuous snow-white tomentose and pubescent bands, the first on entire second tergum and the second on posterior half of fourth tergum; pubescence on black portions black and hairs very minute, posterior margins of second to fifth terga with distinct rows of black bristly hairs, becoming gradually longer on posterior terga, posterolateral corners of second tergum with long black erect hairs. Genitalia reddish brown to yellowish brown, comparatively large, the basal portion almost always visible from above, with conspicuous but fine sparse, erect black hairs, appendages small and short, with short setae.

Wings (pl. 21, fig. 9) comparatively large, gradually narrowed toward narrowly rounded apex, anterior and posterior margins moderately curved outward, nearly half as wide as long, with three broad black bands radiating from the pterostigma; the apical (or costal) band broadest, leaving a very fine transparent marginal costal stripe that is triangularly notched twice at R_{2+3} and R_{4+5}, respectively, a rounded notch in addition immediately below first notch and just below portion between R_1 and R_{2+3}, another narrow transparent stripe interrupted twice by two fine black lines reaching costa; the middle band narrowest and extending from r-m to tip of cu, curved slightly outward; third band from pterostigma to near apex of anal lobe connected with basal streaks which are united to blackish base. Costal vein attaining tip of m, with two distinct bristles, one at middle of first costal cell, one (costal spine) at incision at tip of sc; subcostal vein undulate, its apical section very fine but distinct; R_1 distinctly bristled throughout, strongly curved apically, R_{2+3} undulate, R_{4+5} slightly undulate apically, sparsely bristled from base to just beyond r-m; apical section of m parallel with R_{4+5}; r-m straight beyond middle of $1M_2$ perpendicular;

m-cu nearly straight, parallel with r-m; pterostigma very short, nearly half as long as C_2, often pale apically; $1M_2$ slightly widened apically, with nearly right-angled antero-apical corner and acute postero-apical angle; anal cell shorter than basal cell (M), but wider, its posterior prolongation pointed, hardly half as long as cell proper. Squamae yellowish white to white. Halteres yellowish brown to brown, stalk pale.

Legs short and strong, brownish yellow, with tibiae and tarsi light yellow, apical segments of latter more or less brownish. Forelegs (pl. 21, fig. 10) distinctly shorter than others; femur nearly 3.6 times as long as wide, conspicuously narrowed toward both ends, black pubescent, externodorsal surface with many short black bristles, externoventral margin with one row of 11–12 long black bristles intermixed with long hairs; tibia nearly 2/3 as long as femur, slightly bent near base, covered with sparse brown pubescence, externoventral apex with long yellow bristle; tarsi distinctly longer than tibia, the first segment slightly longer than the four apical segments together, the internoventral surface with dense, light yellow, brushlike bristles, remaining surface with short brown pubescence, each of the four following segments with two or three black short bristles at internoventral apex, pubescence almost all long and brown, claws rather slender, black. Midleg (pl. 21, fig. 11) not longer than hindleg; femora distinctly narrowed apically, black pubescent, ventral surface distinctly grooved nearly throughout, its outer margin with approximately six long black bristly hairs, its inner margin with one row of similar hairs; tibia as long as femur, pubescence short and black, apical spur black and half as long as first tarsal segment, dorsal surface with a row of black sparse short bristly hairs, externo-apical margin with three short spurlike bristles in addition to spur; tarsi 2/3 as long as tibia, first segment as long as four following segments together, with black minute pubescence, internoventral surface with yellowish, dense, brushlike bristles intermixed with short black spinelike bristles at apical third or fourth, second to fifth segments with two rows of black short bristles on ventral surface. Hindlegs (pl. 21, fig. 12) similar to midleg; femur as long as tibia, apical fourth of dorsal surface with approximately five black long bristly hairs, ventral surface with very sparse, moderately long hairs, in addition six black long bristly hairs on apical fourth; tibiae broadened at about middle, median fourth of externodorsal margin with one row of black bristly hairs, internodorsal margin with one row of short black ones, external apex with a short yellowish spinelike bristle; tarsi distinctly shorter than tibia, first segment conspicuously longer than four following segments together, distinctly shorter than half the length of tibia, pubescence and bristles as on midtarsus. All coxae with many black long curved bristly hairs.

Length: Body 4–6 mm, wings 4–5.5 mm.

Types.— Holotype, ♂, USNM 69378; paratypes, 10 ♂ (BMH and NIAS); all from Amami-Oshima Is., May 1–11, 1953.

Genus *Acanthoneura* Macquart

Acanthoneura Macquart, 1843, p. 377.—Enderlein, 1911 (in part), p. 414.—de Meijere, 1914, p. 202.—Hendel, 1927, p. 57.—Shiraki, 1933, p. 294.

Acanthoneura amamioshimaensis, new species

Plate 22

Closely allied to *A. formosana* Enderlein, but easily distinguished by the pattern of mesonotum and abdomen, and by the black basal segment of the ovipositor.

Female.—Brownish species of medium size. Head narrower than thorax, nearly half as long as wide, slightly higher than long. Frons (pl. 22, fig. 5) ochraceous, anterior one-fourth reddish brown, obscured by yellow tomentum black sparse erect pubescence, as wide as eye, slightly longer than wide, lateral margins hardly concave, two very faint longitudinal furrows throughout nearly entire length along inner sides of vertical calli; vertical calli comparatively long, attaining middle of frons, bare and shining; lunule very small, somewhat sunken, whitish; ocellar triangle black, a rather broad transverse carina extending to inner verticles. Face (pl. 22, fig. 6) 3.5 as high as wide, nearly flat and straight, abruptly produced forward above oral margin, tomentose; antennal grooves very faint; vibrissal margins with a few black setae on lower portion; orbits very narrow, slightly widened below. Back of head (pl. 22, fig. 4) light yellow, moderately swollen, lateral margins of occipital foramen with one row of distinct black bristly hairs; cheeks rather narrow, with black setae, genal groove very faint. Eye in profile oval, posterior margins moderately curved outward and anterior margin strongly convex, antero-superior margin almost straight, 1.4 times as long as wide. All bristles black: fronto-orbitals 2:1, inferior nearly as long as upper superior and directed inward; ocellars weak, moderately divergent; postverticals rather widely spaced, parallel, comparatively strong, longer than ocellars, nearly as long as upper superior fronto-orbital; inner verticals longest, slightly divergent, the outer distinctly shorter than lower superior fronto-orbital, a very short bristle (occipital) distinctly weaker and shorter than bristles of occipital row; latter comparatively strong, composed of about 10

bristles extending to middle of eye; genal bristle comparatively long. Antenna (pl. 22, fig. 2) shorter than face, yellow; second segment comparatively short, with a short median bristle nearly as long as bristle of inferior corner, apical marginal bristles conspicuous; third segment darkened, nearly half as long as wide, gradually narrowed toward round apex, with ventral margin rather strongly convex and dorsal margin moderately sinuate, the external surface evenly covered with a dense brown microscopical pubescence; arista black, basal segments light yellow, distinctly but sparsely plumose. Palpi (pl. 22, fig. 3) light yellow, rather slender, apex rounded, with long, black bristles.

Thorax 1.3 times as long as wide, nearly 1.4 times as long as high. Mesonotum (pl. 22, fig. 7) slightly wider than long, somewhat rounded, shining reddish yellow, obscured by blackish pubescence, five brown streaks as follows: median from a point anterior to middle of prozona to middle of metazona, pointed at anterior end and dividing in two and connecting with submedian ones at posterior end; submedian from inner corners of humeral calli to scutellum extended to lateral margins of scutellum and curved inwardly posteriorly; lateral broken up into four spots, the anterior two on prozona, posterior two on metazona, the posteriormost pair the longest; humeral calli shining whitish yellow, furnished with very sparse erect blackish pubescence; notopleural calli comparatively small; scutellum nearly twice as wide as long, disk rather convex, basal third sloping forward, lateral borders broad and perpendicular, ivory yellow, black lateral longitudinal stripes continuing from mesonotal streaks to a point beneath posteroexternal margins, basal corners distinctly reddish yellow; mesophragma and postnotum shining black, with a narrow reddish-yellow longitudinal stripe throughout entire length, the former with a pair of reddish-yellow lateral spots. Pleura (pl. 22, fig. 8) blackish brown on upper half, leaving a narrow yellowish dorsomarginal longitudinal band and light reddish yellow on lower half, sparsely covered with black erect pubescence, especially distinct on mesopleuron; prothorax blackish brown with large median portion yellowish, with about four black fine but conspicuous setae; sternopleuron with long black somewhat bristly hairs along ventral margin. All bristles black: inner scapulars farther apart than inner and outer scapulars, divergent; humeral situated posteriorly, as long as presutural; anterior notopleural about as long as posterior or presutural; dorsocentrals conspicuously behind level of anterior supra-alars, both similar in length; prescutellars slightly behind a line connecting inner posterior supra-alars, nearly as long as dorsocentrals; apical scutellars parallel, as long as basal, both distinctly longer than hairs on mesonotum; mesopleurals two, the upper as long as notopleurals, the lower shorter; pteropleural bristle weak, short, sternopleural strong and long.

Abdomen (pl. 22, fig. 9) (without ovipositor) slightly shorter than thorax and conspicuously wider, third tergum broadest, shining ochraceous with lateral borders black, covered by black depressed pubescence which is erect and longer on basal two terga; first tergum brownish on large median portion; third to fifth terga with a pair of black basal bands which become broader laterad and connect with black lateral borders, on fifth almost disconnected along basal margin; sixth tergum nearly 1/3 as long as preceding, with three pairs of conspicuously long black marginal bristles, between them some bristly hairs; sterna evenly ochraceous, pleural membranes brownish; ovipositor long and depressed, basal segment as long as four apical abdominal terga together, nearly 1.6 times as long as wide, with distinct lateral carinae, black pubescent, second segment light yellowish.

Wing (pl. 22, fig. 1) longer than body, gradually narrowed toward round apex, costal and posterior margins rather similarly curved outward; costal vein with very short costal spine as long as marginal bristles, no distinct basal bristle on first section; R_1 rather straight, more or less curved anteriorly at tip; R_{2+3} hardly undulate at apical half; R_{4+5} nearly straight, apical half of apical section directed slightly posteriorly; m parallel with R_{4+5} apically; r-m straight and comparatively short, perpendicular, nearer middle than apex of $1M_2$; m-cu straight, 2.5 times as long as r-m; pterostigma as long as second costal cell; anal cell distinctly shorter than basal cell, but with long sharp inferior prolongation not exceeding tip of basal cell. Blackish brown, base light brownish yellow, alulae hyaline, anal lobe more or less greyish with hyaline indentations and spots. Three distinct costal indentations; the first in second costal cell, very broad, leaving only both ends of cell, extending posteriorly to rs, more or less yellowish tinged; the second occupying basal third of pterostigma, quadrate; the third situated just beyond tip of pterostigma, nearly 2/5 as wide as mouth of R_1, triangularly extending almost to R_{4+5}. Two very large posterior indentations, one in $2M_2$ and the other in Cu; former somewhat triangular, greyish, nearly filling entire cell, leaving only narrow margins along veins; the latter quadrate, greyish, occupying apical two-thirds which is left subtriangularly along Cu. Four hyaline spots as follows: one round spot before middle of R_5, nearer to R_{4+5} than to m; one near m-cu in $1M_2$, largest and transverse, dividing into two round spots, their inter-

***Acanthoneura amamioshimaensis*, new species, female**

1, right wing; 2, right antenna; 3, left palpus; 4, head, profile; 5, head, from above; 6, head, from front; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 10, right foreleg; 11, right midleg; 12, right hindleg.

space light brownish; third in apical third of R, round, smaller than first; fourth at base of Cu, almost connecting with very small one along antero-apical margin of basal cell. Squamulae yellowish, with brown marginal cilia; halteres light yellow, stalk long and knob small.

Legs light yellow, black pubescent. Foreleg (pl. 22, fig. 10) shortest; femur nearly 1.3 times as long as tibia, externosuperior surface with two rows of sparse black bristly hairs, externoventral margin with about seven black very long bristly hairs; tibia nearly as long as tarsus; first tarsal segment distinctly longer than half the length of tibia, longer than the four following segments together, brushlike bristles on internoventral surface brownish. Midleg (pl. 22, fig. 11) longer than hindleg; femur as long as tibia, pubescence on the externoventral surface distinctly longer and stronger than that on remaining surface, especially conspicuous along externoventral margin; tibia with one strong black apical spur longer than 1/3 the length of first tarsal segment, apex with tiny black bristles; tarsi slightly shorter than tibia, first segment nearly half as long as tibia, distinctly longer than the four following segments together, brushlike bristles on internoventral surface short but dense, many black tiny spines along apical portions of interno- and externoventral margins, as are the spines on each of following segments. Hindleg (pl. 22, fig. 12): femur a little longer than tibia, dorsal surface with one pair of long black bristly hairs before apex, externoventral margin with long hairs, of which an apical few are bristly; tibia distinctly longer than tarsus, pubescence along externoventral margin and on apical fourth of dorsal surface longer than that on remaining portion, ventral apex with one distinct bristle; first tarsal segment very slightly shorter than half the tibia, basal ventral surface with two long hairs, brushlike bristles and spines as in midtarsi.

Length: Body 5.8 mm, wing 6.2 mm.

Holotype. Female, Amami-Oshima Is., May 20 (NIAS).

Subfamily Aciurinae

Genus *Oxyaciura* Hendel

Oxyaciura Hendel, 1927, p. 111.—Shiraki, 1933, p. 358.—Chen, 1948, p. 80.

Oxyaciura formosae (Hendel)

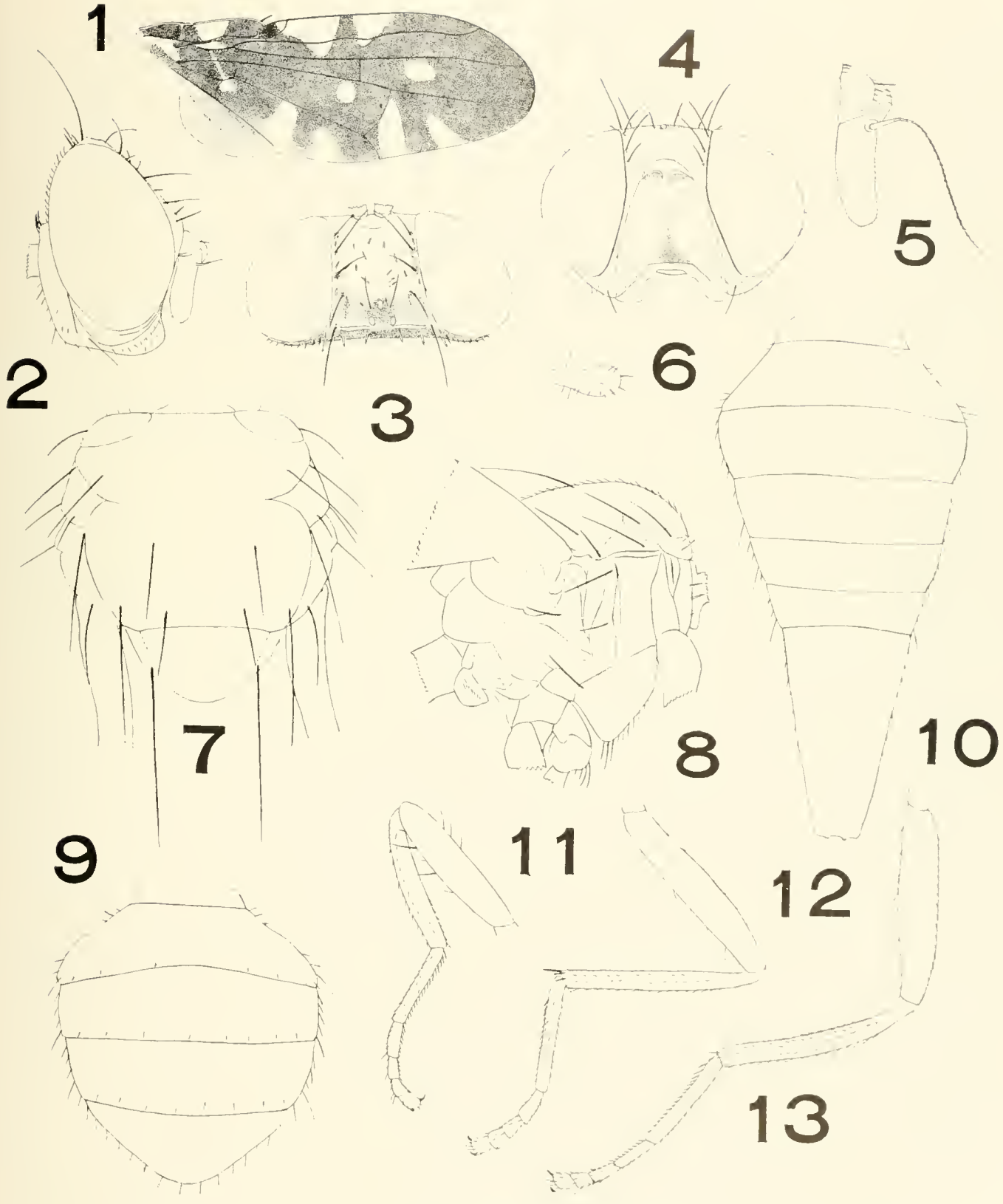
Plate 23

Aciura formosae Hendel, 1915, p. 460.
Oxyaciura formosae (Hendel).—Shiraki, 1933, p. 360.

Shining black species of small size, the black wings with nine distinct hyaline spots, the legs brownish black with the tibiae and tarsi yellowish.

Male.—Head very slightly narrower than, or nearly as long as thorax, 1.5 times as high as long, nearly twice as wide as long. Frons (pl. 23, fig. 3) yellowish or reddish brown, eyemargins paler, posterior third blackish, very sparsely covered with light yellow, blunt pubescence, nearly as wide as eye; vertical calli short, shining black; ocellar triangle shining black, large; lunule distinctly covered with greyish tomentum. Face (pl. 23, fig. 4) as long as wide, more or less broadened beneath, slightly hollowed, reddish brown to dark brown, with a large blackish triangular spot immediately above oral margin, with many short black setae on externoinferior borders; antennal grooves; not distinct; orbits very narrow. Back of head (pl. 23, fig. 2) black, moderately swollen, upper portion distinctly hollowed and obscured by greyish tomentum, pubescence black; cheeks black, obscured by greyish tomentum, genal groove rather inconspicuous. Eyes very sparsely and microscopically pubescent, in profile moderately oblique, oblong, nearly 1.7 times as long as wide, with anterior margin more convex, upper angle less rounded than lower. All bristles black, ocellars short, divergent; fronto-orbitals 1:3, superior pair as long as ocellars and slightly divergent, inferior pair slightly longer than superiors and directed moderately inward; inner verticals strongest and longest, parallel, outer verticals very short and slightly longer than bristles of occipital row; postverticals short but strong, whitish, widely spaced, on the same level and behind, two pairs of similar bristles (inner and outer occipitals); bristles of occipital row short and black, extending to a point above middle of eye; genal bristle nearly as long as ocellar. Antennae (pl. 23, fig. 5) inserted at middle of eye, yellowish brown to pale brown, with dorsal margin and apex of third segment almost always blackish, shorter than face; second segment half as long as third, the median bristle comparatively short; third segment three times as long as wide, very slightly narrowed toward the round apex (Shiraki [1933, p. 359] described it erroneously as "more or less pointed"), with dorsal margin nearly straight and ventral margin moderately convex; arista black, with base yellowish, microscopically pubescent. Palpi (pl. 23, fig. 6) yellowish brown, more or less spatulate, black bristled.

Thorax as long as wide, very slightly longer than high, shining black, more or less obscured by whitish tomentum and black pubescence. Mesonotum (pl. 23, fig. 7) wider than long; humeral calli sometimes paler, with three or four thick whitish bristly hairs; notopleural calli large, sometimes paler, less tomentose;



Oxyaciura formosae (Hendel)

Male: 1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, right antenna; 6, right palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, left foreleg; 12, left midleg; 13, left hindleg. Female: 10, abdomen, from above.

scutellum nearly twice as wide as long, somewhat triangular, disk moderately convex, lateral borders nearly perpendicular but without distinct dorsal carinae, Pleura (pl. 23, fig. 8) less tomentose and pubescent; prothorax with two or three thick, whitish, short bristly setae; sternopleuron with black hairs along ventral margin. All bristles black: scapulars not distinct; humeral slightly shorter than anterior notopleural or presutural; posterior notopleural very short, 1/2 as long as anterior; dorsocentrals very slightly divergent, on a line connecting anterior supra-alars, a little shorter than the latter; presentellars very slightly divergent, on a level with inner posterior supra-alars, distinctly shorter than latter; scutellars one pair, parallel, situated at middle of lateral borders of scutellum, conspicuously long; mesopleurals one or sometimes two, in the latter case the lower one very weak; pteropleural and sternopleural bristles distinct.

Abdomen (pl. 23, fig. 9) shorter than head and thorax together, as wide as thorax, shining black, very slightly whitish tomentose, rather sparsely covered with black fine pubescence; genitalia black, not conspicuous; venter black, yellowish pubescent.

Wing (pl. 23, fig. 1) distinctly longer than body, comparatively narrow, nearly three times as long as wide, with apex rather narrowly rounded, black, with seven hyaline indentations and two round spots as follows: three costal indentations; the basal one in second costal cell near base smallest, extending to rs, a faint hyaline oblique line from here to extreme base of Cu, its posterior end suddenly widened as a small clear dot; the second just beyond pterostigma, extending to R_{4+5} near r-m, largest and triangular; the third very close to second indentation, smaller than latter, extending to below R_{2+3}. Four posterior marginal indentations; two apical ones in $2M_2$, of which the basal one is longer and reaches to just below anterior basal corner of cell, and remaining one at middle of cell is long-triangular; two in Cu, of which the apical is at middle of apex and not extending to cu, the basal at tip of anal vein reaches cu. Two round spots; the first in R_5 before the middle, longer than the other; the second in $1M_2$ close to r-m. Anal lobe more or less paler, with base and apex quite hyaline. Costal spine conspicuous; R_1 directed abruptly toward costa apically; R_{2+3} distinctly undulate; R_{4+5} nearly straight, extreme basal portion and apex of rs with bristles; r-m straight, perpendicular; m-cu moderately convex; pterostigma nearly one-third as long as second costal cell; anal cell shorter than basal cell, apical margin more or less concave. Halteres light yellow, stalk reddish brown; squamulae blackish, margin yellowish.

Legs blackish brown, tibiae and tarsi light yellowish, black pubescent. Foreleg (pl. 23, fig. 11) conspicuously shorter than posterior pairs; femur with two or three black bristly hairs on apical half of externodorsal margin, two black long bristly hairs on apical half of externoventral margin; tibia slightly shorter than femur; tarsi conspicuously longer than tibia, first segment slightly shorter than the four following segments together, yellowish short bristles along ventral margins, second to fourth segments with one pair of black spinelike short bristles on ventral apex. Midleg (pl. 23, fig. 12) as long as hindleg; femur as long as tibia, with very sparse fine black bristly hairs on externoventral margin; tibia with a rather short black apical spur, in addition two short black spinelike bristles on external apex; first tarsal segment distinctly longer than the four following segments together, with two rows of light yellow bristles on ventral surface, three pairs of very short black spinelike bristles at ventral apex, second to fourth segments with two rows of black short spinelike bristles. Hindleg (pl. 23, fig. 13) somewhat thicker than others; femur very slightly shorter than tibia, pubescence as on midfemur; tibia slightly curved, external apex with one distinct but rather fine black bristle; tarsi as long as tibia, first segment as long as the four following segments together, all segments pubescent and bristled as in midtarsus, the last two segments blackish.

Length: Body 2.8–3.2 mm, wing 3.2–3.5 mm.

Female.—Similar to the male. Sixth abdominal tergum (pl. 23, fig. 10) slightly shorter than preceding; basal segment of ovipositor shining black, very sparsely black pubescent, nearly as long as four preceding abdominal terga together, depressed, with distinct lateral carinae; second segment shining blackish brown or black.

Length: Body (without ovipositor) 2.8–3.2 mm, wing 3.2–3.7 mm.

Material examined.—Okinawa Is.: 7♀, 17♂, Mar. 26–Apr. 18; Iriomote Is.: ♀, Jan. 19; all in NIAS.

Distribution.—Formosa; Iriomote, Ishigaki, and Okinawa Islands.

Subfamily Tephritinae

Genus *Trupanea* Guettard

Trupanea Guettard, 1762, p. 171.—Schrank, 1795, p. 147.—Shiraki, 1933, p. 450.

Trypanea, emendation.

***Trupanea okinawaensis*, new species**

PLATE 24

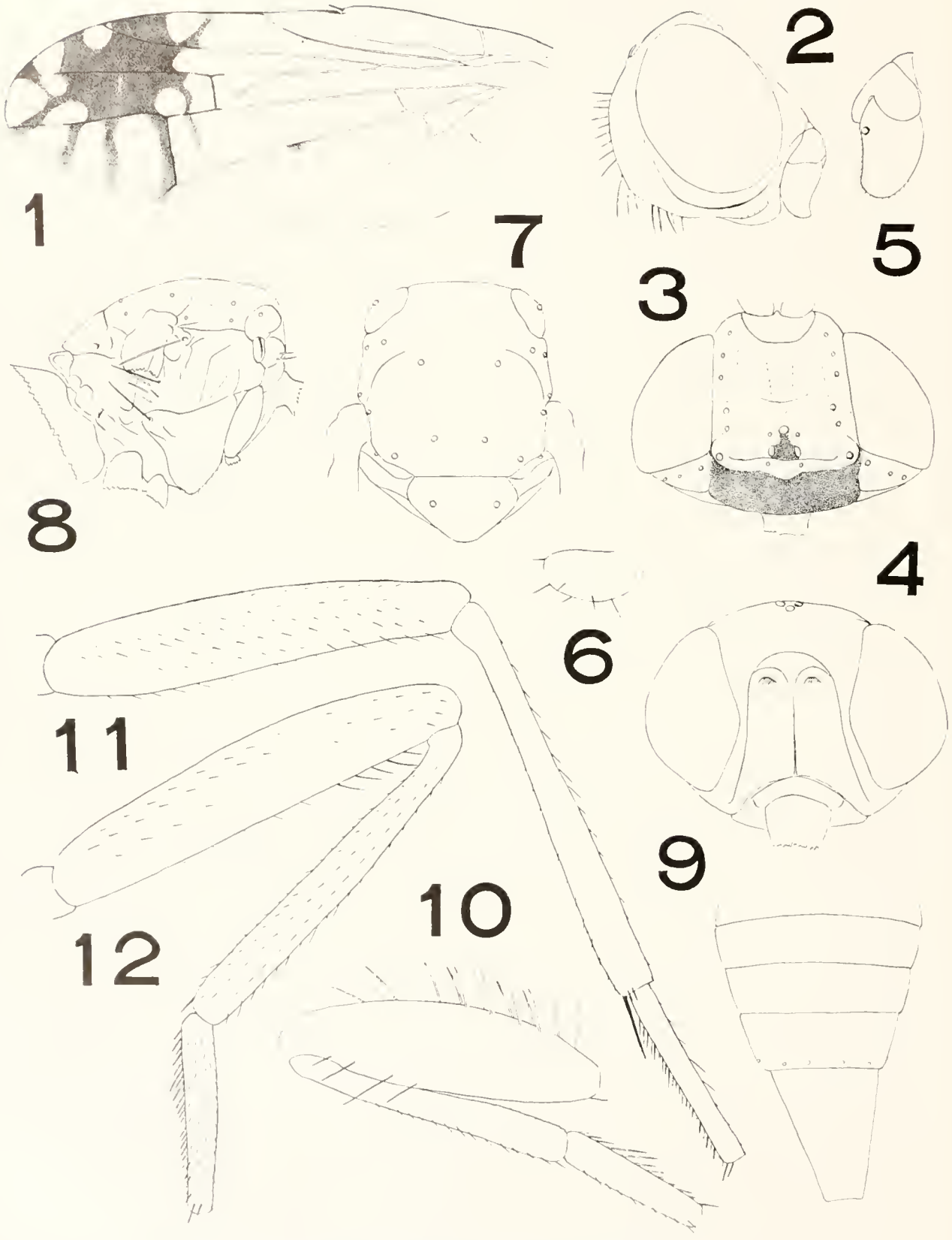
A rather large *Trupanea*, closely related to *T. formosae* Hendel (1927, p. 201), but easily distinguished from it by the comparatively long, quite hyaline pterostigma and by the different wing pattern.

FEMALE.—Head nearly 1.5 times as wide as long or high, slightly narrowed anteriorly. Frons (pl. 24, fig. 3) less than twice as wide as one eye, nearly parallel-sided, abruptly narrowed at anterior end, dirty orange yellow, posterior half more or less darkened, ashy-grey tomentose, with a broad, conspicuously whitish tomentose and sparsely white pubescent median longitudinal streak from lunule to immediately before blackish ocellar triangle; orbits comparatively broad, distinctly whitish tomentose and white pubescent; vertical calli more or less elevated, fully one-third as long as frons, obscured by whitish tomentum; lunule comparatively large, swollen, obscured by whitish tomentum. Face (pl. 24, fig. 4) a little wider than long, moderately hollowed, yellowish, entirely obscured by whitish tomentum; orbits rather narrow, inner margins quite bare; antennal grooves deep and broad, leaving very narrow median and lateral carinae. Back of head (pl. 24, fig. 2) moderately swollen, yellowish, upper portion black, more or less dusted by whitish tomentum, ventral border with brownish bristly hairs intermixed with few whitish ones; cheeks rather narrow, yellowish, whitish tomentose, with narrow genal groove, vibrissal edge more or less fine bristled. Fronto-orbital bristles 2:3; occipitals wanting. Antennae (pl. 24, fig. 5) short, attaining oral margin, reddish yellow; second segment comparatively large, distinctly longer than half the length of third segment; third segment three-fifths as wide as long, slightly narrowed toward round apex, ventral margin strongly convex. Palpi (pl. 24, fig. 6) yellowish, half as wide as long, somewhat oval, very sparsely bristled along ventral border.

Thorax distinctly narrower than head, nearly 1.4 times as long as wide, slightly higher than wide, black, obscured by ash-greyish tomentum and covered with whitish pubescence. Mesonotum (pl. 24, fig. 7) nearly as wide as long, pubescence longer on posterior marginal border; humeral and notopleural calli yellowish, former with whitish short bristly hairs, latter almost bare; scutellum 1.2 times as wide as long, without lateral carinae, disk not pubescent, marginal portion with distinct whitish pubescence. Pleura (pl. 24, fig. 8) very sparsely pubescent and less tomentose than on mesonotum, pteropleuron more or less reddish brown immediately below wing-base; prothorax more or less brownish on lower portion, with two or more short whitish bristles; sternopleuron with many long whitish hairs on ventral border; mesophragma and postnotum quite bare, distinctly whitish tomentose. Dorsocentral bristles closer to suture than to level of anterior supra-alars; prescutellars distinctly anterior to line connecting inner posterior supra-alars; one basal pair of scutellars; mesopleural yellowish.

Abdomen (pl. 24, fig. 9) (without ovipositor) slightly longer and wider than thorax, black, obscured by a greyish tomentum, covered by a yellowish-white pubescence; sixth tergum slightly longer than fifth, with three pairs of brown marginal bristles; basal segment of ovipositor slightly shorter than three preceding abdominal terga together, shining black, sparsely pubescent.

Wing (pl. 24, fig. 1) distinctly longer than body (without ovipositor), nearly 2.6 times as long as wide, moderately narrowed apically; subcosta very slightly sinuate, apical portion obsolete; R_1 moderately curved, ending very far before r-m; R_{2+3} straight, but apical portion rather distinctly curved forward; R_{4+5} not bristled, straight; m slightly sinuate apically, but ending quite parallel with R_{4+5}; r-m straight, perpendicular, nearer to apex of $1M_2$ than to its middle, shorter than apical section of anterior margin of $1M_2$; m-cu straight, parallel with r-m, twice as long as latter; pterostigma very slightly longer than half as long as second costal cell, rather sharply pointed; anal cell shorter than basal cell, apical margin slightly concave. Star-shaped blackish apical patch gives off five rays to posterior wing-margin, proximal ray extending into middle of $1M_2$, second ray along m-cu, distal ray ending at end of m, and remaining two rays at median third of apex of $2M_2$. Costal border with triangular hyaline indentation in middle of apex of R_1, a round indentation immediately beyond tip of R_1, a larger indentation immediately before tip of R_3, quite separated from large apical spot in R_5; however, when connected with it a black spot at apex of R_3. R_5 hyaline basally, with four hyaline spots, the proximal one round and anterior to m-cu, the large apical more or less triangular, the following anterior connected to apical indentation of R_3 and often united with apical one, and the posterior connected to apical hyaline portion of $2M_2$; pterostigma more or less yellowish, with a very small ill-defined dark spot at anterior base, very faint dark dot just below middle of pterostigma; R with a very faint small spot near apex, apical margin more or less darkened; small blackish spot just below middle of the posterior margin of $1M_2$. Halteres reddish yellow, with knob darkened; squamulae light yellowish with brown margins.



Trupanea okinawaensis, new species, female

1, left wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, left antenna; 6, left palpus; 7, thorax, from above; 8, thorax, from side; 9, apical part of abdomen, from above; 10, left foreleg without tarsus; 11, left midleg without tarsus; 12, left hindleg without tarsus.

Legs uniformly light yellowish brown, brownish pubescent. Foreleg (pl. 24, fig. 10) conspicuously shorter than others: femur distinctly narrowed toward both ends, dorsal surface with two rows of long yellowish bristles, of which the apical bristles are very sparse, externoventral margin with about four brownish bristly hairs on apical half; tibia a little shorter than femur, less than twice as long as first tarsal segment, latter with yellowish brushlike bristles on internoventral surface, with two conspicuously long yellowish bristles just before middle of the externoventral margin. Midleg (pl. 24, fig. 11) longest and rather slender: femur as long as tibia, no distinct setae; tibia with a long black apical spur one-third as long as first tarsal segment; latter nearly half as long as tibia, comparatively slender, brushlike bristles on internoventral surface yellowish, rather short. Hindleg (pl. 24, fig. 12) comparatively strong; femur a little longer than tibia, apical third of externoventral margin with brown short bristly hairs; tibia as long as first tarsal segment, ventral apex with a short black spurlike bristle; first tarsal segment gradually but very slightly narrowed toward apex, brushlike bristles on the venter as in midtarsus.

Length: Body (without ovipositor) 3.2–3.8 mm., wing 4–4.3 mm.

Types.—Holotype, ♀, USNM 69379; paratypes, ♀ (USNM); 5 ♀ (NIAS); all collected by Mr. K. Iha, at Yogi, Okinawa Is., Sept. 23 and Oct. 1, 1954.

Genus *Spathulina* Rondani

Spathulina Rondani, 1856, p. 113.—Shiraki, 1933, p. 430.
Ditricha Rondani, 1871, p. 163.

Spathulina acroleuca (Schiner)

Plate 25

Tephritis acroleuca Schiner, 1868, p. 368.
Oxyna parca Bezzi, 1913, p. 156, pl. 10, fig. 62.
Euribia parca (Bezzi).—Hendel, 1915, p. 465.
Spathulina acroleuca (Schiner).—Shiraki, 1933, p. 431.

A small dark species with yellowish legs and comparatively narrow black wings which are distinctly whitish at the base and possess whitish well-defined spots.

Male.—Head almost always very slightly wider than thorax, 1.6 times as wide as long, fully 1.2 times as wide as high. Frons (pl. 25, fig. 3) twice as wide as one eye, slightly but distinctly narrowed forward, flat, yellow to reddish yellow, more or less darkened on posterior half, with narrow orbits distinctly whitish tomentose and white pubescent; lunule comparatively large, moderately whitish tomentose; vertical calli comparatively small but distinct, nearly one-third as long as frons, more or less whitish tomentose; ocellar triangle moderate in size, blackish, a rather distinct transverse carina throughout the vertex, near inner posterior corners of the eyes with an ill-defined blackish spot. Face (pl. 25, fig. 4) almost flat, but inferior third distinctly produced forward, conspicuously broader than long, somewhat waxy yellow, obscured by a greyish tomentum; orbits very narrow, distinctly whitish tomentose; antennal grooves very shallow, not distinct; vibrissal edges very slightly carinate, with very short black bristly setae. Back of head (pl. 25, fig. 2) flat above and swollen below, light yellow, with upper half, excepting eye-margins, blackish, whitish tomentose; cheeks narrow, oral margin with yellowish bristly hairs behind genal bristle. Eyes comparatively large, in profile moderately oblique, nearly 1.4 times as long as wide, with posterior margin moderately and anterior margin strongly convex, superior angle distinctly narrower than inferior angle. All bristles almost black; ocellars strong, divergent, longer than fronto-orbitals; fronto-orbitals 2:2, the upper superior conspicuously shorter than lower superior and yellowish white, inferior pairs more or less crossed and a little shorter than lower superior; postverticals yellowish white, parallel or slightly divergent, as long as upper superior fronto-orbital; inner verticals strongest and longest of all bristles of head, almost parallel, the outer pair yellowish white and very slightly longer than postvertical; occipitals only one pair, the inner one yellowish white, directed inward; bristles of occipital row yellowish white, almost always four, intermixed with some black fine setae; genal bristle yellowish white. Antennae (pl. 25, fig. 5) inserted just below middle of eye, light reddish yellow, moderately whitish tomentose, very short; second segment whitish, nearly half as long as following segment, without distinct median bristle; third segment nearly half as wide as long, apex quite narrowed, dorsal margin concave, ventral margin strongly convex, marginal pubescence long; arista black, with basal segments yellowish, microscopically pubescent. Palpi (pl. 25, fig. 6) comparatively large, nearly one-third as wide as long, apex more or less broadened and with some black bristles, ventral margin with fine pubescence.

Thorax a little longer than wide or high. Mesonotum (pl. 25, fig. 7) black, fully obscured by a yellowish-grey tomentum and covered with a yellowish-white rather stout but short depressed pubescence, but anterior perpendicular portion quite bare; humeral calli more or less yellowish, covered with a greyish tomentum and furnished with erect yellowish-white setae; notopleural calli comparatively large, swollen, yellowish, quite

Spathulina acroleuca (Schiner)

Male: 1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, right antenna; 6, right palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, left foreleg; 12, right midleg; 13, right hindleg. Female: 10, abdomen, from above.

obscured by a greyish-yellow tomentum, without pubescence; scutellum rather small, nearly half as long as wide, without distinct lateral carinae, colored and tomentose as in the mesonotum, hardly pubescent. Pleura (pl. 25, fig. 8) almost evenly black, obscured by a greyish tomentum and with whitish pubescence; sternopleuron less tomentose than in mesopleuron, ventral margin with long whitish-yellow hairs; mesophragma and postnotum black, covered with a greyish tomentum exeept a median longitudinal portion. All bristles mostly black: scapulars whitish yellow, very short, the inner pair closely spaced; presuturals as long as humeral or anterior notopleural; posterior notopleural yellowish, nearly half as long as anterior; dorsocentrals just behind suture, far before the line connecting roots of anterior supra-alars, distinctly longer than presutural, almost always parallel; prescutellars just before level of inner posterior supra-alars, distinctly shorter than latter, almost always slightly directed inward; scutellars only one basal pair, longest of all thoracic bristles, almost always parallel; mesopleural one, rather long, below which there are yellowish-white bristly hairs; pteropleural yellowish white, almost always directed hindward; sternopleural directed superoposteriorly.

Abdomen (pl. 25, fig. 9) as long as, or a little shorter than thorax, shining black, black pubescent, and very slightly greyish tomentose; fifth tergum as long as preceding, posterior margin almost always with two pairs conspicuously long black bristly hairs; genitalia black, basal segment with one pair of conspicuously long and curved black bristles, appendages more or less brownish.

Wing (pl. 25, fig. 1) longer than body, nearly 3.2 times as long as wide, brownish black, with about one-fourth of basal portion whitish subhyaline, its outer margin extended from beyond middle of second costal cell to basal third of anal lobe; white subhyaline spots as follows: four costal indentations, the basal at apex of second costal cell and extends to R_{2+3}, three remaining in R_1, the first often triangular, the second largest and extending into middle of R_3, the third smallest; two apical spots, one in R_3, the other in R_5, both connected to each other, the anterior smaller and extending only to posterior half of apex of R_3, posterior occupying the entire apex of R_5. Five spots along posterior margin, the two apical situated at basal half $2M_2$, both nearly attaining m; the middle (smallest) near tip of Cu; the two remaining spots broad, one immediately before middle of apex of Cu quite round, occupying nearly the entire width, the other at tip of anal lobe extending to Cu. In middle portion of wing three slots, a round one in R_5 just above m-cu, a similar but smaller one at posterior angle of $1M_2$, and remaining one on m before r-m. In addition a small spot at base of Cu, connected with basal subhyaline portion. Halteres and squamulae light dirty yellow.

Legs yellow, blackish pubescent. Foreleg (pl. 25, fig. 11) shortest of all legs; femur very slightly longer than tibia, dorsal surface with two rows of long bristly hairs, externoventral margin with about five long bristly hairs; tibia as long as tarsus; first tarsal segment very slightly shorter than four following segments together, brushlike bristles on ventral surface yellowish and as long as pubescence on dorsal surface. Midleg (pl. 25, fig. 12) a little longer than hindleg; femur distinctly shorter than tibia, externoventral margin with a few black long bristly hairs; tibia distinctly longer than tarsus, with a black apical spur, and two very short black bristles at apex; first tarsal segment shorter than four following segments together, brushlike bristles on ventral surface rather short, sparse, and blackish. Hindleg (pl. 25, fig. 13) somewhat thicker than others; femur longer than tibia, near dorsal apex with one or two pairs of short black bristly hairs; tibia as long as tarsus, moderately curved near base; first tarsal segment nearly as long as three following segments together, brushlike bristles on ventral surface as in midtarsus.

Length: Body 2.4–2.6 mm, wing 2.6–3.2 mm.

Female.—Quite similar to male. Abdomen (pl. 25, fig. 10) (without ovipositor) almost always as long as thorax; sixth tergum very slightly shorter than, or as long as fifth, posterior margin with two or three pairs of conspicuously long black bristly hairs; basal segment of ovipositor longer than the three preceding terga together, shining black, very fine pubescent, with distinct lateral margin; second segment brownish yellow; ovipositor yellow, the tip needle-like.

Length: Body (without ovipositor) 2.2–3 mm, wing 2.5–3.2 mm.

Material examined.—Ishigaki Is.: ♂, ♀, Feb. 26; Okinawa Is.: 23 ♂, Mar. 27–Apr. 23, 14 ♀, Mar. 18–Apr. 23; Miyako Is.: 2 ♀, Mar. 7, 8.

Distribution.—India, Australia, Formosa, Ryukyu Islands.

Genus *Paroxyna* Hendel

Paroxyna Hendel, 1927, p. 146.—Shiraki, 1933, p. 404.—Zia, 1937, p. 199.

Paroxyna matsumotoi, new species

Plate 26

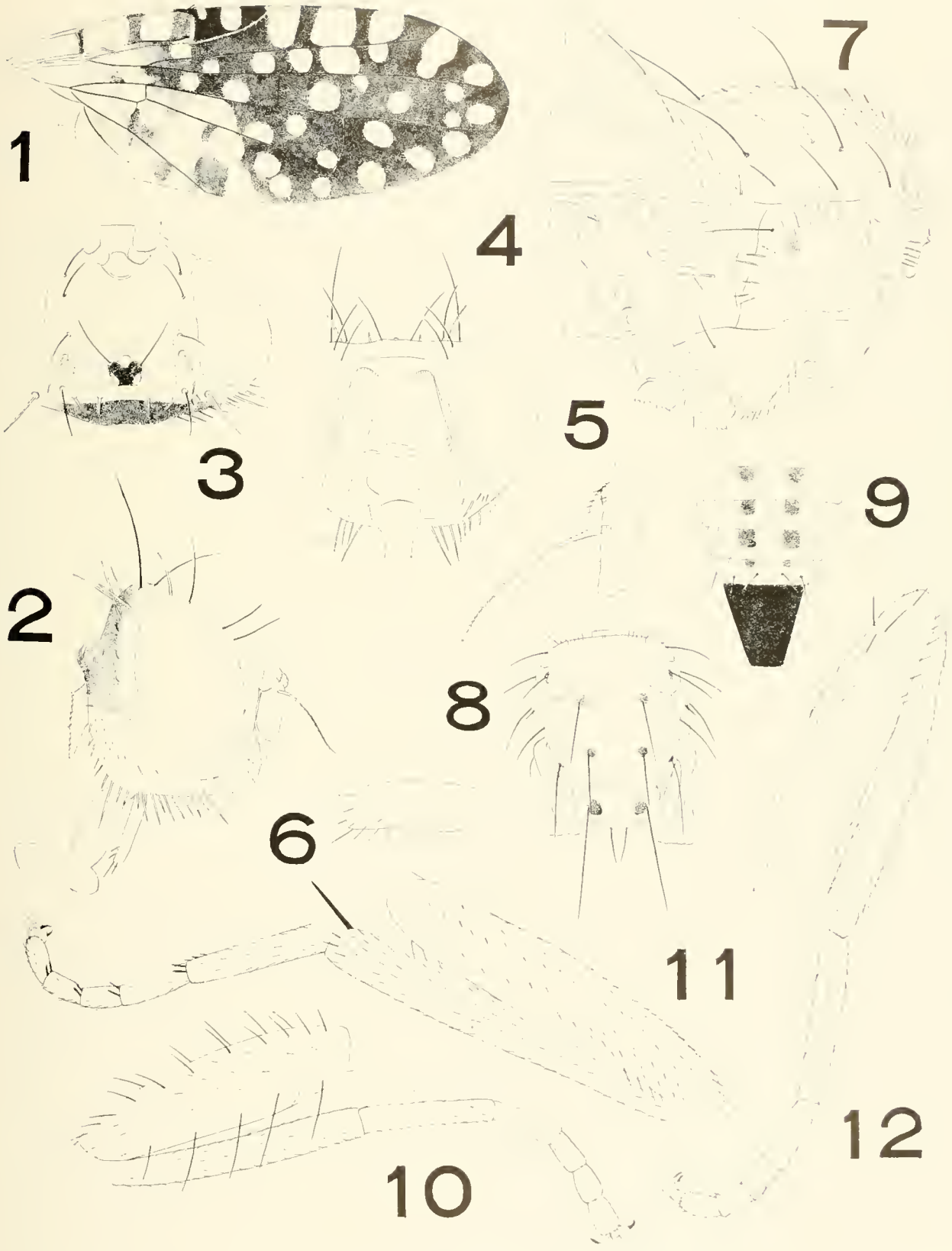
Allied to *Paroxyna locuiana* Hendel (1927, p. 154, pl. 10, fig. 9), but at once distinguished by two apical

spots in R_3, two spots in the pterostigma, the coloration of frons and scutellum, and distinctly spotted thorax.

Female. Head as wide as thorax, 1.6 times as wide as long, nearly as long as high. Frons (pl. 26, fig. 3) flat, fully twice as wide as one eye, lateral margins more or less convex, very slightly narrowed apically, light brownish grey, more or less whitish tomentose, with a rather broad whiter median longitudinal streak slightly broadened posteriorly and extending from lunule to vertex, the latter colored as in median streak; orbits distinctly covered with a white tomentum and sparsely furnished with whitish pubescence; lunule concave, white tomentose; vertical calli more or less distinct, not extending to middle of frons, slightly elevated, not shining but well dusted with white tomentum; ocellar triangle rather distinctly blackish, quadrate. Face (pl. 26, fig. 4) slightly hollowed, conspicuously broad, nearly twice as wide as long, with lateral margins straight, somewhat yellowish, obscured by snow-white tomentum; orbits comparatively broad and distinct, nearly same width throughout entire length, dusted more heavily with snow-white tomentum; antennal groves faint; vibrissal margin not conspicuous, with whitish pubescence. Back of head (pl. 26, fig. 2) strongly swollen but upper portion flat, yellowish, obscured by white tomentum, with a very large blackish patch on upper portion, lower border with long whitish bristly hairs, remaining portion with black microscopic pubescence; cheek nearly one-sixth as high as eye, yellowish white, lower margin with long whitish bristly hairs, vibrissal margin with blackish setae. Eyes microscopically but distinctly pubescent, comparatively small, in profile oblique, oblong, with anterior and posterior margins similarly curved outward, upper and lower angles rather narrowly rounded. All bristles mostly black: ocellars at level of median ocellus, comparatively weak but longer than lower superior fronto-orbitals, divergent; fronto-orbitals 2:2, the upper superior pair whitish and distinctly shorter than remaining pairs, inferior pairs shorter than lower superiors, directed inward but not crossed; inner verticals longest of all head bristles, curved inward apically, outers whitish and stronger than upper superior fronto-orbitals; postverticals whitish, parallel, a little shorter than upper superior fronto-orbitals; occipitals one pair, whitish, very slightly shorter than postverticals; three bristles of occipital row whitish intermixed with very short black bristle hairs. Antennae (pl. 26, fig. 5) not attaining oral margin, dirty yellowish; second segment nearly two-thirds as long as following, with a rather fine median bristle; third segment fully half as wide as long, dorsal apex more or less pointed and rather long pubescent; arista entirely black, black-pubescent. Palpi (pl. 26, fig. 6) light yellow, three times as long as wide, nearly straight, with ventral apex narrowly rounded, very sparsely black bristled.

Thorax fully 1.2 times as wide as, or a little longer than, high. Mesonotum (pl. 26, fig. 8) as long as wide, anterior border evenly rounded, blackish, distinctly obscured by greyish tomentum and sparsely covered by whitish pubescence, prozona with three very faint brownish longitudinal streaks, a blackish spot at each root of the presuturals, dorsocentrals, prescutellars, and inner posterior supra-alars; humeral and notopleural calli more or less yellowish, latter distinctly elevated; scutellum nearly twice as wide as long, disk not flat, lateral carinae basal only, blackish, apex yellowish, entirely obscured by greyish tomentum, with a very few yellowish-white hairs on marginal portions, one pair blackish-brown round spots just inside roots of basal bristles. Pleura (pl. 26, fig. 7) blackish, quite obscured by a greyish tomentum, with anterior stigma distinctly whitish tomentose and posterior stigma distinctly light reddish-white tomentose; prothorax more or less yellowish, with four or five yellowish-white short bristles; mesopleuron with short whitish bristly hairs on upper and posterior borders, at an ill-defined brownish spot about middle; sternopleuron with short yellowish-white bristly hairs along ventral margin; mesophragma and postnotum blackish, evenly grey tomentose. All bristles almost black: scapulars whitish, very fine, the median pair close together, the outer composed of about four bristles; humeral as long as anterior notopleural or presutural; posterior notopleural slightly shorter than anterior; dorsocentrals parallel, situated just behind suture, far before level of anterior supra-alars, as long as prescutellars; prescutellars parallel, distinctly before line connecting inner posterior supra-alars, nearly as long as latter; scutellars two pairs, the basal longest of all thoracic bristles, slightly divergent, apical pair very short and crossed; mesopleural a little shorter and finer than anterior notopleural, directed hindward; pteropleural one, whitish, rather strong but conspicuously shorter than mesopleural, directed hindward; sternopleural as long as mesopleural, directed posterodorsally.

Abdomen (pl. 26, fig. 9) (without ovipositor) shorter than thorax, black, entirely obscured by greyish-white tomentum, covered with rather sparse yellowish-white pubescence, third to sixth terga each with one pair of somewhat quadrate blackish-brown spots; sixth tergum as long as preceding with two pairs black erect marginal bristles; basal segment of ovipositor shining black, depressed, as long as three



Paroxyna matsumotoi, new species, female

1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, left antenna; 6, left palpus; 7, thorax, from side; 8, thorax, from above; 9, abdomen, from above; 10, left foreleg; 11, left midleg; 12, left hindleg.

preceding abdominal terga together, with distinct lateral carinae.

Wing (pl. 26, fig. 1) distinctly longer than body (without ovipositor), 2.5 times as long as wide, apex narrowly rounded, two comparatively short costal spines; Sc distinctly undulate on basal half; R_1 moderately curved so that tip of pterostigma is rather sharply pointed; R_{2+3} nearly straight, but tip distinctly divergent with R_{4+5}, latter without bristles, straight, parallel with m; r-m straight, perpendicular, nearer to middle of $1M_2$ than to its apex; m-cu slightly convex, less than twice as long as r-m, almost parallel with latter; pterostigma nearly 0.68 times as long as second costal cell; anal cell a little shorter than basal cell, apical margin more or less angularly concave, inferior angle pointed, more or less prolonged. Wings blackish brown, basal portion white subhyaline, with many white subhyaline spots as follows: second costal cell with two large quadrate spots, of which the basal irregularly extends to m and is distinctly larger than apical; pterostigma with two spots, one just beyond costal incision very small and somewhat yellowish, other in middle, quadrate, extending from costa to R_1; R_1 with four, one just below apex of second costal cell smaller and rounded, remaining three large spots from beyond tip of pterostigma to just proximad of apex of cell, equidistant along costa, attaining R_{2+3}, the middle spot largest; R_3 with seven spots, two at apex, the following three just below costal indentations in R_1, the two remaining above first section of R_{4+5}; R_5 with six spots, apical placed just below middle of apex, the following pair very near apical, the next in middle of cell, between it and largest basal spot one very small spot along R_{4+5}; R with two round spots, before and after basal spot in R_3, respectively; $2M_2$ with four round spots, about the same size, the three along the wing margin almost equidistant, the other near anterior basal corner; $1M_2$ with five spots, two in basal half and three in apical half, the semicircular subbasal one largest and occupying the entire width, the apical at inferior corner smallest and rounded, the next beyond r-m along m, and the third just beyond subbasal spot along Cu; Cu with seven, of which three are along wing margin, the apical two quite rounded and smaller, the third rather irregular in shape, the four remaining along Cu, the basal at superior basal corner, the subbasal largest and extending from Cu to anal vein, the next touching basal spot of wing margin; anal lobe with three along posterior margin, almost filling posterior half and leaving three blackish irregular spots along anal vein. Halteres reddish yellow; squamulae brownish.

Legs light brownish yellow, femora almost blackish brown, blackish pubescent. Foreleg (pl. 26, fig. 10) shortest, more or less paler than the others; femur as long as tibia, dorsal surface with black very sparse short bristly hairs in two rows, externoventral margin with five long black bristly hairs; tibia shorter than tarsus; first tarsal segment as long as the three following segments together, with rather short somewhat yellowish brushlike bristles on internoventral surface, second segment nearly as long as the two following segments together. Midleg (pl. 26, fig. 11) little longer than hindleg; femur shorter than tibia, without conspicuous bristly hairs; tibia distinctly longer than tarsus, with one black long apical spur; first tarsal segment about one-third times as long as tibia, nearly as long as the three following segments together, brushlike bristles on ventral surface rather sparse and short, second segment a little shorter than the two following segments together. Hindleg (pl. 26, fig. 12): femur as long as tibia, dorsal apex with one pair of black bristly hairs, apical externoventral margin with more or less long black hairs; tibia nearly as long as tarsus; first tarsal segment half as long as tibia, nearly as long as four following segments together, second segment as long as the two following segments together, brushlike bristles on ventral surface as in midtarsus.

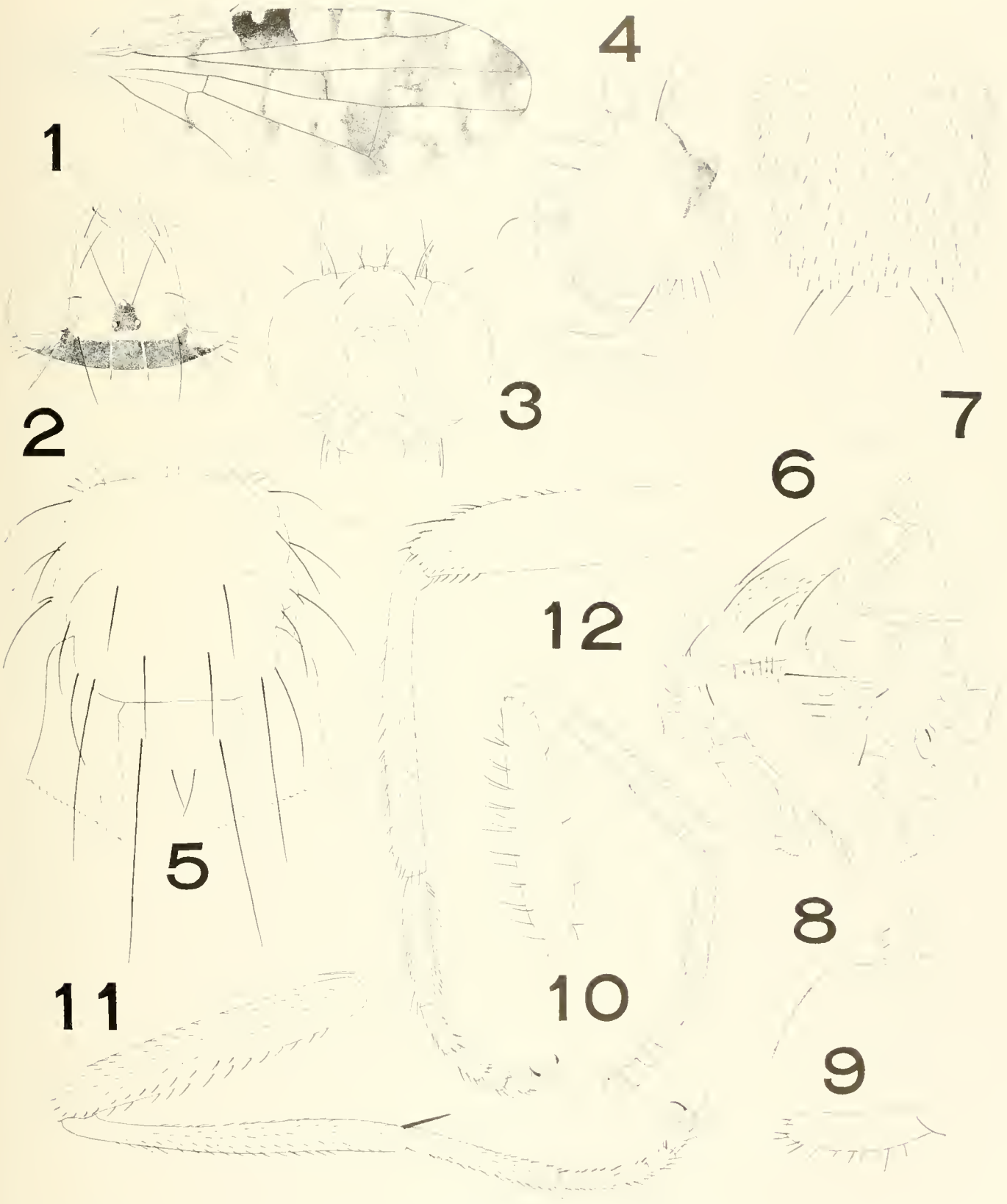
Holotype.—Female, Okinawa Is., Apr. 7, presented by Mr. A. Matsumoto (NIAS).

Paroxyna iriomotensis, new species

Plate 27

Allied to *Paroxyna arisanica* Shiraki (1933, p. 409, fig. 80, pl. 12, fig. 1), but at once distinguished by the large subhyaline spots of the wings and the nonstriped mesonotum.

Female.—Head as wide as thorax, nearly 1.4 times as long as wide, slightly longer than high. Frons (pl. 27, fig. 2) about twice as wide as eye, slightly narrowed forward with straight lateral margins, orange yellow, posterior half somewhat darkened, with a very narrow whitish-grey median longitudinal line; orbits very narrow, more or less greyish dusted with whitish sparse pubescence; lunule more or less greyish tomentose, rather convex; vertical calli very narrow and short, nearly one third as long as frons, somewhat elevated; ocellar triangle blackish, with comparatively small ocelli are equidistant and rather far apart, vertical carina not sharp. Face (pl. 27, fig. 3) comparatively small, nearly as long as wide but distinctly broadened below, slightly hollowed, light reddish yellow, more or less greyish tomentose; orbits comparatively broad, distinctly widened below, well elevated, microscopically



Paroxyna iriomotensis, new species, female

1, right wing; 2, head, from above; 3, head, from front; 4, head, profile; 5, thorax, from above; 6, thorax, from side; 7, abdomen, from above; 8, left antenna; 9, left palpus; 10, right foreleg; 11, right midleg; 12, right hindleg.

black pubescent; antennal grooves not distinct; vibrissal margin not conspicuous, with short yellowish bristly hairs. Back of head (pl. 27, fig. 4) strongly swollen, yellow, upper portion more or less flat and with black large median patch, lateral swellings conspicuous, microscopically black pubescent over entire surface and with long yellowish bristly hairs on lower margin; cheeks fully one sixth as high as eye, yellow, obscured by greyish tomentum, with rather distinct genal groove, lower margin with short yellowish bristly hairs. Eyes comparatively small, in front view rather oblong with upper angle somewhat pointed, in profile oblong, nearly 1.7 times as long as wide, upper angle distinctly narrower than lower. All bristles mostly black: ocellars divergent, as long as inner verticals but weaker; fronto-orbitals 2:2, the upper superior bristle yellowish white, strong, but shorter than lower superior and directed posteriorly, the inferior pairs directed inward but not crossed, as long as lower superior; postverticals yellowish white, parallel, as long as upper superior fronto-orbitals; inner verticals longest of all head bristles, directed inward, outer verticals yellowish white, slightly longer than postverticals; occipitals not developed; two short, yellowish-white occipital bristles; genal bristle yellowish white. Antennae (pl. 27, fig. 8) short, not attaining oral margin, orange yellow; second segment nearly half as long as third, with distinct black median bristle; third segment twice as long as wide, apex very narrowly rounded, dorsal margin slightly concave, ventral margin strongly convex, microscopically blackish pubescent; arista black with basal portion yellowish, microscopically pubescent. Palpi (pl. 27, fig. 9) distinctly longer than antenna, slender, reddish yellow, ventral margin and the apex with short yellowish bristles. Proboscis moderately long, geniculate, with long labellum.

Thorax nearly 1.25 times as long as wide, 1.17 times as long as high, dull black, more or less obscured by greyish tomentum, covered with a yellowish-white blunt pubescence. Mesonotum (pl. 27, fig. 5) as long as wide, anterior border rounded as usual; humeral calli reddish yellow, with short yellowish-white bristly hairs; notopleural calli moderately swollen, near middle more or less reddish yellow, bare; scutellum two-thirds as long as wide, extreme apex reddish brown, without distinct lateral carinae, with very few fine hairs. Pleura (pl. 27, fig. 6) less tomentose than notum, very sparsely pubescent; prothorax with one row of about five short yellowish-white bristles; mesopleuron reddish yellow on upper border, in addition several yellowish-white short bristly hairs, posterior margin with distinct yellowish-white setae, of which the uppermost below the mesopleural bristle is conspicuously long and bristly; pteropleuron with two or three yellowish-white short bristly hairs just below yellowish-white pteropleural bristle; sternopleuron comparatively large, ventral margin with long yellowish-white somewhat bristly hairs; posterior stigma distinctly white tomentose; mesophragma and postnotum entirely black, obscured by greyish tomentum. All bristles mostly black: humerals as long as anterior notopleural or presutural, but somewhat finer; posterior notopleurals very short, nearly one fourth as long as anterior; dorsocentrals slightly divergent, nearer to suture than to level of anterior supra-alars, longer than presuturals; prescutellars parallel, nearly as long as dorsocentrals, distinctly anterior to a line connecting inner posterior supra-alars, which are conspicuously longer than former; outer posterior supra-alars as long as anteriors; scutellars two pairs, the basal longest of all thoracic bristles, slightly divergent, apical pair very short, crossed; mesopleural bristle shorter than anterior notopleurals, distinctly directed posteriorly; sternopleural directed upward, pteropleural directed posteriorly.

Abdomen (pl. 27, fig. 7) (without ovipositor) as long as thorax, pubescence longer than mesonotum; sixth tergum slightly longer than fifth, with two pairs of long black marginal bristles; basal segment of ovipositor nearly as long as the three preceding abdominal terga together, with distinct lateral carinae, shining black, rather sparsely covered with blackish microscopical pubescence.

Wing (pl. 27, fig. 1) longer than body (without ovipositor), rather narrow, apex narrowly rounded, one costal spine; subcostal vein distinctly undulate, the apical portion obsolete; R_{2+3} very slightly undulate; R_{4+5} quite straight, bare, parallel with m; r-m straight, slightly oblique, the posterior end close to wing tip, nearer to middle of $1M_2$ than to m-cu; m-cu straight, the anterior end close to wing tip; pterostigma nearly two-thirds as long as second costal cell, with apex sharply pointed; anal cell distinctly shorter than basal cell, inferior angle slightly prolonged. Brown, leaving basal fourth whitish subhyaline, with many large whitish subhyaline spots as follows: second costal cell whitish subhyaline, with a small brown spot at middle of costa; pterostigma darker, with a yellowish-white indentation at middle; R_1 with four spots, the three distal situated along costa and extending to R_{2+3}, apical beyond middle of apex and smallest, basal just beyond pterostigma, proximal spot situated below near apical half of second costal cell; R_3 with six spots, distal most situated just after tip of R_1 and extends to R_{4+5}, median three placed below the three distal spots of R_1, and more or less united to each other and to

former, the proximal one occupies entire basal portion and is entirely united with basal spot in R_1, remaining spot very small, placed between basal and median spots; R with two large spots; R_5 with seven or eight, the basalmost just after r-m is largest and occupies entire width, apical spot nearly filling apex, the next two, below the apical spot of R_5, transverse, united, between them and basal spot are three or four; $1M_2$ with three or four, the basal isolate, the remaining more or less united; $2M_2$ with four, three of these along wing margin, remaining one along basal half of m and united with median marginal spot; Cu with one distinct spot near apex, the remaining portion almost white subhyaline, leaving two or three brownish spots, one of which is placed immediately beyond end of anal vein, and one above it, in addition one small rather distinct brown spot on inferior angle of anal cell; anal lobe with a brownish small spot near apex. Squamulae light yellowish; halteres orange yellow.

Legs yellowish brown, with the femora black excepting the apices, black pubescent. Foreleg (pl. 27, fig. 10) conspicuously shorter than the others: femur as long as tibia, dorsal surface with two rows of black sparse bristly hairs, externoventral margin with five long brown bristly hairs; tibia nearly as long as tarsus, pubescence on dorsal surface long; first tarsal segment as long as four following segments together, brushlike bristles on internoventral surface yellowish and rather dense, but short. Midleg (pl. 27, fig. 11) longest: femur slightly shorter than tibia, pubescence on external surface long; tibia distinctly longer than tarsus, slightly curved, with one black apical spur; first tarsal segment as long as the four following segments together, brushlike bristles as in front tarsus. Hindleg (pl. 27, fig. 12): femur slightly longer than tibia, dorsal subapex with one black long bristly hair; tibia slightly longer than tarsus, pubescence on dorsal surface long; first tarsal segment longer than the three following segments together, basal externoventral margin with two long black conspicuous bristles, brushlike bristles as in front tarsus.

Length: Body (without ovipositor) 3.1 mm, wing 3.6 mm.

Holotype.—Female, Iriomote Is., Jan. 6 (NIAS).

Genus *Euaresta* Loew

Euaresta Loew, 1873, p. 296.—Hendel, 1927, p. 172.

Euaresta punctata, new species

Plate 28

A small greyish-brown species with the wings dark brown with white subhyaline spots, the legs light orange yellow, and the abdomen with paired brown spots.

Male.—Head as wide as thorax, 1.5 times as wide as long, 1.3 times as wide as high. Frons (pl. 28, fig. 3) orange yellow, with a somewhat greyish median longitudinal streak, twice as wide as one eye, lateral margins more or less curved outward, nearly the same width throughout entire length, flat but very slightly convex; orbits comparatively broad, conspicuously white tomentose, with very fine snow-white pubescence; lunule conspicuous, whitish-grey tomentose, half as wide as frons, well elevated; vertex more or less dull yellowish, ocellar triangle whitish tomentose, a rather distinct straight transverse carina. Face (pl. 28, fig. 2) nearly twice as wide as long, moderately narrowed upward, with lateral margins straight, moderately hollowed, oral margin slightly produced forward, more or less waxy yellowish and moderately obscured by whitish tomentum, lower median portion distinctly yellowish brown or reddish brown; orbits comparatively broad, distinctly white tomentose; vibrissal edges rather broad, not distinctly carinate, white tomentose, furnished with very short whitish setae; antennal grooves not distinct. Back of head (pl. 28, fig. 4) moderately swollen, upper portion moderately hollowed in median area, light yellowish, whitish tomentose, with a large deep black median patch on upper portion, lateral swellings with whitish setae, lower margin with long whitish bristly hairs; cheeks about one-fifth as high as eye, oral margin with short whitish bristly hairs, genal groove not distinct. Eyes moderate in size, in front view the inner angle obtusely rounded; in profile rather perpendicular, posterior margin strongly convax, upper angle distinctly narrower than lower. All bristles mostly black: ocellars divergent, as long as lower superior fronto-orbital but finer; fronto-orbitals 2:2, the upper superior pair yellowish white and shorter than the lower superior; inferior fronto-orbitals as long as lower superior, directed inward but not crossed; postverticals yellowish white, almost always parallel, a little longer than upper superior fronto-orbital; inner vertical bristles longest of all head bristles, nearly parallel, outer verticals yellowish white, nearly half as long as inners; occipitals one pair, slightly directed inward, distinctly shorter than postvertical; bristles of occipital rows yellowish white, one to four, intermixed with black weak bristles; genal yellowish white. Antennae (pl. 28, fig. 9) light orange yellow, short, not attaining oral margin; second segment nearly two-thirds as long as third, without distinct median bristle; third segment almost twice as long as wide, dorsal margin nearly straight, ventral margin strongly convex, apex round; arista black, basal segments more or less yellowish,

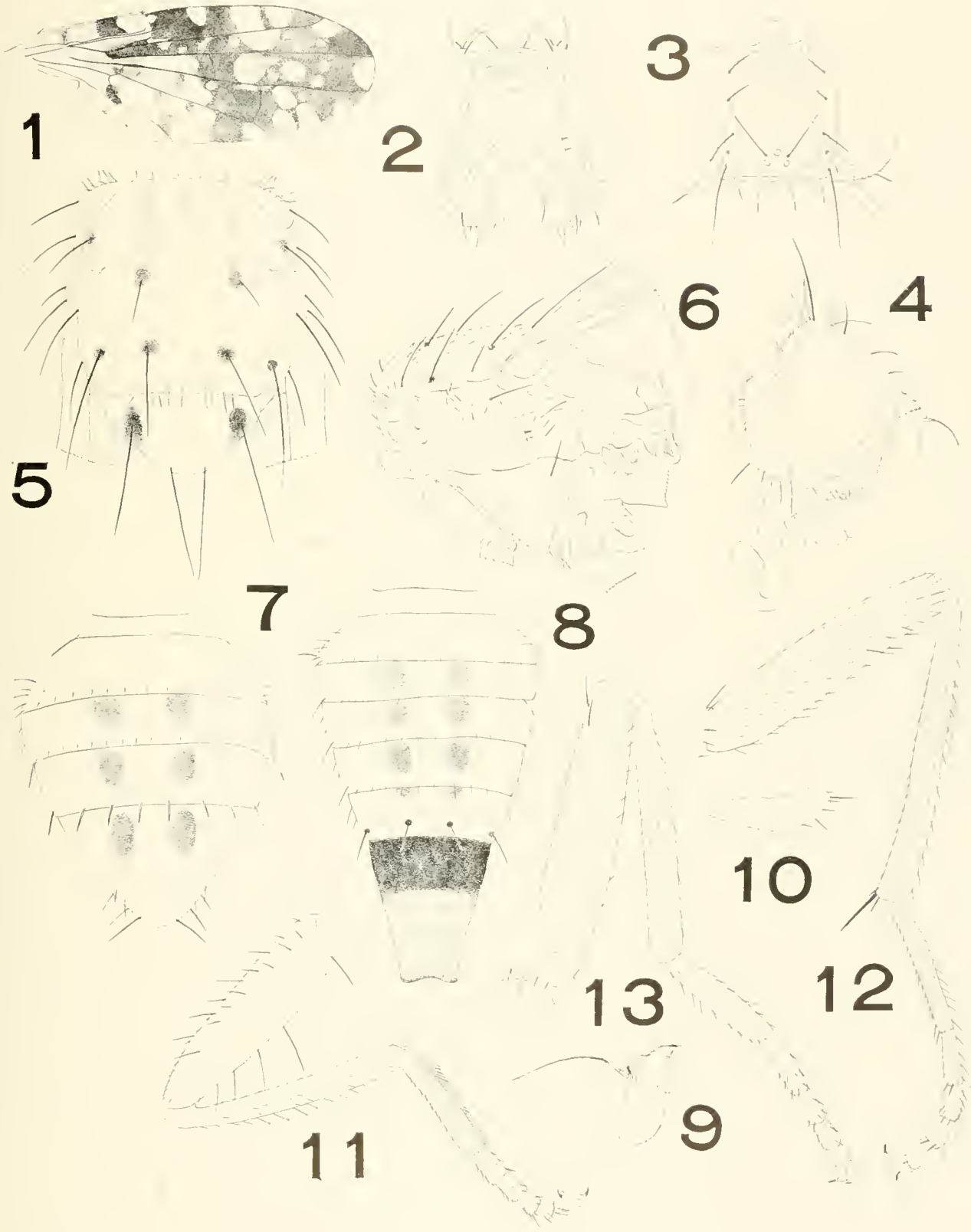
microscopically pubescent. Palpi (pl. 28, fig. 10) light yellowish, long, fully three times as long as wide, slightly curved, rounded apex, apical portion with a few black bristles.

Thorax nearly 1.3 times as long as wide or high. Mesonotum (pl. 28, fig. 5) nearly as long as wide, somewhat quadrate, blackish, densely covered with yellowish-grey tomentum, with whitish rather sparse blunt pubescence, three light brownish rather faint longitudinal streaks from anterior margin to level of dorsocentrals, the median one becoming obsolete posteriorly and sublateral pair from inner corners of humeral calli to roots of dorsocentrals through inner ends of suture, sometimes extending behind to roots of presentellars, a brownish spot on each of the bases of presturals, dorsocentrals, presentellars, and inner posterior supra-alars; humeral and notopleural calli yellowish, somewhat obscured by greyish tomentum, former with whitish bristly setae; scutellum nearly twice as wide as long, colored and dusted as in mesonotum but sometimes very slightly pale apically, with a pair of brown lateral longitudinal streaks not extending to anterior margin. Pleura (pl. 28, fig. 6) blackish, quite obscured by whitish-grey tomentum and covered with very few fine blackish hairs; prothorax with two strong but short yellowish-white bristles and fine bristly hairs; upper portion of mesopleuron more or less reddish yellow, this paler portion with short yellowish white bristly hairs directed upward, posterior margin with a row of similarly colored short bristles below the black mesopleural bristle; sternopleuron comparatively large, ventral margin with long yellowish-white hairs; mesophragma and postnotum blackish, obscured by yellowish-grey tomentum, the former with a pair of brownish lateral spots. All bristles black: humerals as long as anterior notopleural or presturals, but somewhat weaker; posterior notopleurals very short, half as long as anteriors; dorsocentrals nearer to suture than to level of anterior supra-alars, almost always parallel, distinctly longer than presturals; presentellars slightly before a line connecting inner posterior supra-alars, almost always parallel, as long as dorsocentral; scutellars two pairs, the basal longest of all thoracic bristles but only slightly longer than inner posterior supra-alar, moderately divergent, apical pair crossed; mesopleural and sternopleurals strong, the latter directed upward; pteropleural yellowish, strong, nearly as long as sternopleural one, directed posteriorly.

Abdomen (pl. 28, fig. 7) slightly broader and longer than thorax, blackish with posterior margin of each tergum more of less yellowish, obscured by yellowish-grey tomentum and covered with yellowish-white setae, third to fifth terga each with a pair of blackish-brown spots; fifth tergum distinctly longer than two preceding ones combined, posterior margin with three pairs of long black marginal bristles; genitalia comparatively large, blackish, obscured by yellowish-grey tomentum, appendages yellowish.

Wings (pl. 28, fig. 1) longer than body, fully one-third as wide as long, anterior and posterior margins moderately curved, apex rather broadly rounded, with two costal spines, blackish brown, with basal portion and many spots whitish subhyaline; R_{2+3} nearly straight, with apical half hardly undulate; R_{4+5} straight, parallel with m; r-m straight, slightly oblique, posterior end nearer wing apex; m-cu somewhat perpendicular, moderately convex; pterostigma sharply pointed, half as long as second costal cell; anal cell shorter than basal cell, with inferior angle moderately prolonged. Whitish subhyaline indentations, spots and dots as follows: second costal cell with two large quadrate spots at base and apex; pterostigma with a very small dot at extreme base of costa; R_1 with three indentations, one just beyond pterostigma, not attaining R_{2+3}, remaining two at middle of mouth almost quadrate and extending to R_{2+3}; R_3 with two spots, one just beyond end of R_{2+3} somewhat rounded and extending to middle of width, the other semicircular and just below median indentation of R_1, extending nearly to R_{4+5}, before and after it with small dots; R_5 with three spots, the distal at apex, the proximal almost above m-cu, the middle one nearer to basal spot than to apical, between these three spots some small dots; $2M_2$ with three indentations and one spot, the latter between the two basal indentations, sometimes a few dots along m; basal two-thirds of $1M_2$ with two large spots united along Cu, at apical one-third three or four dots, of which two or three are situated along m and the remaining one along Cu; basal two-thirds of Cu five large spots, three along Cu and two along anal vein, all these united in the median longitudinal line, apical section of Cu with an indentation; R with one large long spot, sometimes two dots along r-m; anal lobe almost always whitish subhyaline, sometimes with two small brownish dots on axillary vein. Halteres light reddish yellow; squamulae light yellowish.

Legs reddish yellow, blackish pubescent, moderate in length. Foreleg (pl. 28, fig. 11) distinctly shorter than posterior pairs: femur as long as tibia, dorsal surface with two rows of black sparse bristly hairs, externoventral margin with one row of four or five black bristles; tibia nearly as long as tarsus, pubescence on dorsal surface longer than elsewhere; first tarsal



Euaresta punctata, new species

Male: 1, right wing; 2, head, from front; 3, head, from above; 4, head, profile; 5, thorax, from above; 6, thorax, from side; 7, abdomen, from above; 9, left antenna; 10, right palpus; 11, left foreleg; 12, left midleg; 13, left hindleg. Female: 8, abdomen, from above.

segment as long as the four following segments together, brushlike bristles on internoventral surface dense and yellowish. Midleg (pl. 28, fig. 12) distinctly longer than hindleg: femur somewhat brownish on basal half, distinctly shorter than tibia; apicoventral margins with black short bristly hairs; tibia a little longer than tarsus, with one apical spur and one or two very weak short bristles at apex; first tarsal segment distinctly shorter than half the length of tibia, shorter than the four following segments together, brushlike bristles on ventral surface blackish and sparse. Hindleg (pl. 28, fig. 13) somewhat thicker than others; femora brownish on middle half, as long as tibia, dorsal apex with one pair of black bristly hairs; tibia very slightly shorter than tarsus; first tarsal segment rather broad, a little shorter than the three following segments together, brushlike bristles as on midtarsus, with one or two conspicuously long bristles.

Length: Body 2.4–3.5 mm, wing 2.8–3.8 mm.

Female.—Quite similar to male, but scutellum more yellowish. Abdomen (pl. 28, fig. 8): sixth tergum very slightly longer than fifth, anterior margin with one pair small brownish spots, and at roots of each of four black marginal bristles a blackish dot; basal segment of ovipositer flat, lateral carinae castaneous, blackish toward basal half, transversely striated, microscopically black pubescent.

Length: Body (without ovepositor) 2.8–2.9 mm, wing 3–3.2 mm.

Types.—Holotype, ♂, USNM 69380; paratypes, 5 ♂, ♀ (USNM), 2 (BMH), remaining in NIAS; total 9 ♂, 3 ♀ from Iriomote Is., Jan. 3–9.

Genus *Sphenella* Robineau-Desvoidy

Sphenella Robineau-Desvoidy, 1830, p. 773.—Shiraki, 1933, p. 400.
Sincura Lioy, 1864, p. 1024.

Sphenella indica Schiner

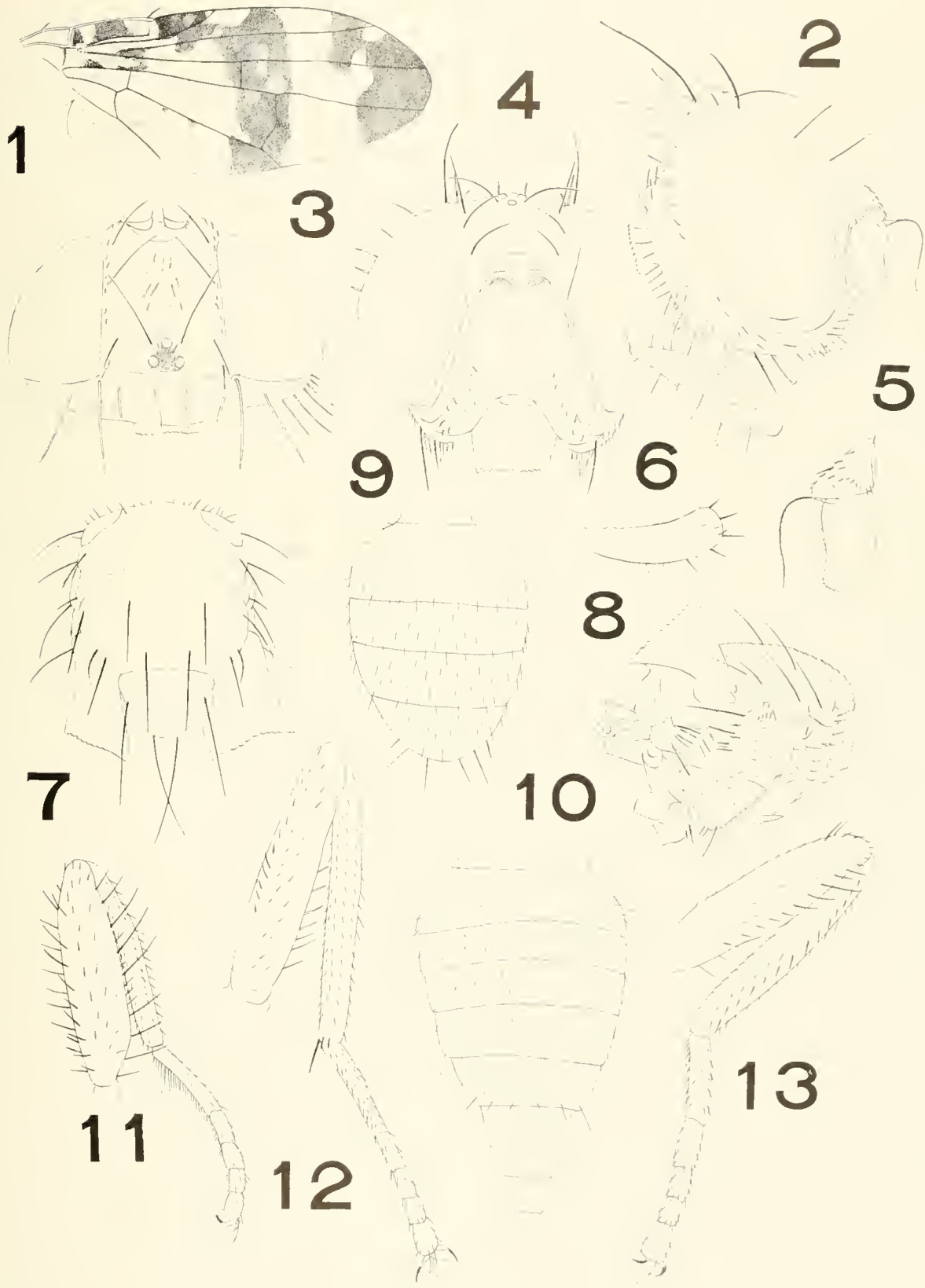
Plate 29

Sphenella indica Schiner, 1868, p. 267.—Shiraki, 1933, p. 402.

A small black species covered with a heavy but short yellowish pubescence. The yellowish scutellum is rather long, and the dark brown wing has a broad subapical subhyaline whitish band.

Male.—Head semicircular, nearly as wide as thorax, broader than high, 1.5 times as wide as long. Frons (pl. 29, fig. 3) distinctly wider than one eye, slightly narrowed forward, longer than wide, orange yellow, posterior half dull waxy color, more or less whitish tomentose, orbits distinctly yellowish pubescent, median portion of anterior half with yellowish, erect, obtusely pointed setae; lunule whitish, but not conspicuous; vertical calli waxy greyish yellow, short, extending to just anterior to median ocellus; ocellar triangle nearly 1/5 as wide as vertex, blackish, with a few yellowish blunt setae, transverse carina just behind triangle more or less distinct. Face (pl. 29, fig. 4) strongly concave, upper mouth-edge distinctly produced forward, antennal grooves rather indistinct, orbits narrow and nearly same width throughout entire length, light waxy yellowish, distinctly whitish tomentose, vibrissal margin with blackish short curved setae and bristly hairs below. Back of head (pl. 29, fig. 2) moderately swollen, upper portion more or less flattened, yellow, moderately dusted, with upper median portion blackish, lateral swellings with many bristly yellowish hairs; cheeks moderately wide, a rather distinct genal groove, somewhat paler than back of head. Eye comparatively large, in front view somewhat rhomboidal, with inner margin rather distinctly angulate; profile distinctly oblique, oblong, with upper angle somewhat pointed, posterior margin slightly and anterior margin strongly curved outward. All bristles mostly blackish: ocellars divergent, longer than fronto-orbitals; fronto-orbitals 2:2, the upper superior pair yellowish and conspicuously shorter than remainder, the inferior directed distinctly inward but never crossed; postverticals yellowish, parallel, slightly longer than upper superior fronto-orbitals; inner verticals longest of all bristles, very slightly curved inward at tips, outer pair yellowish and slightly longer than lower superior fronto-orbitals; occipitals one pair, yellowish, distinctly shorter than postvertical; about four yellowish occipital bristles distinctly longer than occipitals; genal bristle rather weak. Antennae (pl. 29, fig. 5) yellow to orange yellow, not attaining oral margin; first segment with short whitish bristly setae on dorsal apex; second segment nearly two-thirds as long as following, with median bristle black and more or less distinct; third segment fully 1.5 times as long as wide, very slightly narrowed toward the hardly rounded apex, dorsal tip more or less pointed, dorsal margin very slightly concave at just before tip, furnished with blackish rather conspicuous pubescence on the dorsal and apical borders; arista black, with basal segments yellowish, microscopically black pubescent. Palpi (pl. 29, fig. 6) light yellow, toward apex more or less reddish yellow, comparatively long, apical portion with black very sparse bristles, ventral margin with rather fine brown hairs becoming yellowish toward the basal half.

Thorax nearly 1.3 times as long as wide, as wide as high. Mesonotum (pl. 29, fig. 7) as long as wide, quadrate, black, obscured by yellowish-grey tomentum,



Sphenella indica Schiner

Male: 1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, left antenna; 6, right palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, right foreleg; 12, left midleg; 13, left hindleg. Female: 10, abdomen, from above.

densely covered with yellowish white, short but stout pubescence; humeral calli yellow, with many short yellowish bristly hairs; notopleural calli almost always reddish yellow, with yellowish pubescence; scutellum distinctly light yellow, obscured by yellowish-grey tomentum and with some yellowish, comparatively long, sparse bristly hairs all over surface, comparatively long but distinctly wider than long, disk flat, lateral carinae more or less distinct, lateral borders rather perpendicular. Pleura (pl. 29, fig. 8) black, with a rather broad yellowish dorsal band from humeral callus to wing-base, covered with very sparse yellowish-white short bristly hairs longer than those on notum, prothorax black, more or less reddish toward stigma, almost always with two short yellowish-white bristles; anterior and posterior stigmata reddish yellow; mesopleuron with posterior margin light yellowish, pubescence on upper yellowish portion and posterior border longer and stouter than on others, pteropleuron with conspicuous long and stout bristly hairs; sternopleuron with long yellowish hairs along ventral margin; mesophragma and postnotum black, more or less greyish tomentose. All bristles black: scapulars not distinct, anterior margin of mesonotum with very short bristly hairs; humerals, presuturals, and anterior notopleurals almost the same length, posterior notopleural nearly one-third as long as anterior; dorsocentrals distinctly anterior to a line connecting roots of anterior supra-alars, nearly as long as latter, parallel; prescutellars very slightly anterior to level of inner posterior supra-alars, parallel, a little shorter than latter; outer posterior supra-alars distinctly curved, very short; scutellars two pairs, the basal longest of all thoracic bristles, as long as apical pair, which is always crossed; mesopleural one, in addition moderately strong yellowish-white bristles; pteropleural bristle always yellowish brown, rather strong and almost always directed posteriorly, below it some yellowish white rather long bristly hairs; sternopleural nearly as long as mesopleural, directed somewhat upward.

Abdomen (pl. 29, fig. 9) nearly as long as thorax, blackish brown to black, very often somewhat reddish on posterior margin of each tergum, covered with a yellowish-grey tomentum and dense yellowish-white short setae; second tergum sometimes reddish brown, with lateral borders often paler; fifth tergum almost always shorter than the two preceding terga combined, apical border somewhat triangularly reddish yellow, posterior margin with two or three pairs of black long bristly hairs; genitalia conspicuous, shining reddish brown to blackish, appendages light yellow; pubescence on sterna finer than that on terga.

Wing (pl. 29, fig. 1) shorter than body, nearly 2.5 times as long as wide, evenly narrowed toward the rather narrowly rounded apex, with a distinct black costal spine; R_1 ending basad of r-m, moderately curved so that tip of pterostigma is sharply pointed; R_{2+3} more or less curved, moderately divergent from R_{4+5}; the latter not bristled, parallel with m in the apical section; r-m straight, perpendicular, distance from m-cu less than its own length; m-cu more or less convex, with anterior and posterior apical angles of $1M_2$ rather right angled; pterostigma distinctly shorter than second costal cell; anal cell shorter than basal, with apical margin slightly concave, inferior angle more or less prolonged. Wings whitish, with broad short costal streak, broad median cross band and broad apical band, blackish brown; costal streak from base to tip of pterostigma extending irregularly behind to R_{2+3}, basal half to m, quite black in the pterostigma but both extreme ends paler, often at middle a somewhat paler dot, below pterostigma a short but broad prolongation into R_3, in second costal cell two light yellow-brownish subhyaline indentations, the apical one extending to R_{2+3}, the basal one very near its base, first costal cell and a portion below second costal cell irregularly light yellow brownish. Median crossband, over r-m and m-cu, united with costal streak at apex of pterostigma, nearly the same width throughout, with one whitish indentation and five to seven light yellow-brownish subhyaline spots on anterior half, indentation just beyond pterostigma often light yellow brownish posteriorly and quite constant, the spots rather irregular, posterior margin of this band sometimes notched just above Cu. Apical band from nearly the apical third of the apex of R_1 to apical half of $2M_2$, with one row of two or three whitish or light yellowish subhyaline spots extending from anterior corner of R_3 to middle of of R_5, the posterior one almost always very large and united with the whitish very broad subhyaline cross band between brownish median apical bands, sometimes in addition one or two very small yellowish-brown dots in R_3; basal half of Cu almost always with three small brownish ill-defined spots, the interno-inferior one sometimes larger and uniting with a large paler spot just below anal vein, and interno-apical spot often obsolete. Halteres light yellowish to light reddish yellow; squamulae whitish yellow.

Legs light reddish yellow, hind femora somewhat blackish brown at basal two-thirds, brownish pubescent. Foreleg (pl. 29, fig. 11) distinctly shorter than others; femur distinctly longer than tibia, pubescence on externodorsal surface rather strong, externoventral margin with one row of long black bristly hairs throughout entire length; tibia as long as tarsus; first tarsal

segment distinctly shorter than the four following segments together, brushlike bristles on ventral surface rather long and yellowish brown. Midleg (pl. 29, fig. 12) longer than hindleg; femur distinctly shorter than tibia, externoventral margin with a few yellowish bristly hairs on basal half; tibia longer than tarsus, with a long black apical spur; first tarsal segment distinctly shorter than the four following segments together, brushlike bristles on ventral surface nearly as in front tarsus. Hindleg (pl. 29, fig. 13) more or less thicker than midleg; femur shorter than tibia, dorsal apical portion with two distinct but short black bristly hairs, ventral margins with long hairs, of which an apical few on external margin are rather strong; tibia slightly longer than tarsus, somewhat broadened at middle; first tarsal segment distinctly shorter than the three following segments together, brushlike bristles on ventral surface as in midtarsus.

Length: Body 3.2–4 mm, wing 3–3.3 mm.

Female.—Quite similar to male. Abdomen (pl. 29, fig. 10) distinctly yellow to reddish yellow on posterior marginal border of each tergum; sixth tergum nearly as long as fifth, almost always with three pairs of rather erect black marginal bristles; basal segment of ovipositor broader than long, black, more or less shining, fine pubescent, pubescence on basal half yellowish and rather dense and remainder rather sparse and blackish; second segment of ovipositor blackish; tip light reddish yellow, and apex quite triangular.

Length: Body (without ovipositor) 3.5–3.8 mm, wing 3.3–3.5 mm.

Material examined.—Ishigaki Is.: 2♂, Feb. 6, 12, ♀, Mar. 7; Okinawa Is.: 3 ♂, Mar. 25, 4 ♀, Mar. 26, 27 and Apr. 20, 23; Amami-Oshima Is.: ♂, Apr. 7, 4, ♀, May 1–9; Iriomote Is.: ♀, Jan. 19; all in NIAS.

Distribution.—India, Formosa, Ryukyu Islands.

Genus *Protephritis* Shiraki

Protephritis Shiraki, 1933, p. 439.

Protephritis assimilis, new species

Plate 30

Allied to *Tephritis sauteri* Enderlein (1911, p. 456, fig. A), but easily distinguished from it by the wing pattern, the hyaline spots of the anterior half of the anal lobe never being developed, and the basal spot of R_5 always rather close to R_{4+5} and not traversing m. The striated mesonotum, the evenly black abdominal terga, the comparatively long third antennal segment, and the comparatively small genitalia are other distinguishing characters.

Male.—Head as wide as thorax, nearly twice as wide as long, slightly higher than long. Frons (pl. 30, fig. 3) broader than one eye, nearly parallel-sided but abruptly narrowed at antennal bases, rather flat, ochraceous, more or less dusted, eye-margins snow-white tomentose and yellowish pubescent, middle portion with a few slightly longer hairs; vertical calli not distinctly elevated, extending to middle of frons, somewhat whitish tomentose; ocellar triangle comparatively small, more or less black, whitish setae surrounding anterior ocellar, a very narrow transverse, whitish tomentose carina between lateral ocelli and roots of inner verticals. Face (pl. 30, fig. 4) nearly as long as wide, concave, oral margin produced forward, light waxy yellow, obscured by white tomentum; orbits very narrow, snow-white tomentose; vibrissal edges broad, distinctly yellow, with short black setae; antennal grooves narrow but rather distinct, attaining oral margin. Back of head (pl. 30, fig. 2) rather conspicuously swollen, upper portion distinctly concave, light yellow, upper portion blackish except eye-margins, which are whitish tomentose, lower half with very sparse short black setae, ventral border with conspicuously long yellowish bristly hairs, of which the anterior several are black; cheeks narrow, colored and tomentose as on swellings of back of head, with fine genal groove, pubescence black. Eyes comparatively large, in front view the inner margin obtusely angled and outer margin nearly evenly covex; in profile more or less oblique, nearly 1.6 times as long as wide, posterior margin slightly and anterior margin curved strongly outward, upper and lower angles rather broadly rounded, but former a little narrower than latter. Antennae (pl. 30, fig. 5) inserted at middle of eye very closely, comparatively short, yellow to light reddish yellow; second segment nearly half as long as one following, median bristle not distinct, apical margin with short black setae rather evenly placed, at inferior corner two or more long black bristles; third segment nearly twice as long as wide, narrowed toward the round apex, dorsal margin more or less concave, ventral margin rather strongly convex; arista very long brown or black, with base yellowish, black pubescent. Palpi (pl. 30, fig. 6) comparatively large, yellowish white or yellow, nearly three times as long as wide, the dorsal margin straight, ventral margin distinctly convex, apical portion with black bristles. All bristles black except postverticals; the outer verticals, occipitals, and bristles of occipital row yellowish; ocellar bristles divergent, nearly as long as lower superior fronto-orbital, distinctly finer than latter; fronto-orbitals 2:3, the superior pairs stronger than inferior, upper superior shorter than latter, lowest inferior con-

spicuously shorter and situated near preceding; postverticals comparatively long, parallel; inner verticals longest of all head bristles, parallel, the outer pair longer than postverticals, at level of latter a yellowish short bristle (inner occipital) behind inner verticals; occipital row of about three rather long bristles; genal bristle rather weak, dark colored.

Thorax distinctly longer than wide or high, very slightly longer than abdomen. Mesonotum (pl. 30, fig. 7) as long as or a little longer than wide, anterior border rather strongly produced forward, blackish brown, entirely obscured by dense greyish-yellow tomentum, covered with numerous fine, short but stout yellow depressed hairs, large perpendicular area just above neck quite bare and shining black, with five very narrow brownish longitudinal stripes, the median one and sublateral pair extending from immediately behind anterior margin to middle of metazona, and lateral pair from suture to bases of inner posterior supra-alars, all these stripes united at their posterior ends, leaving a large ill-defined brownish patch on posterior half of metazona, with six more or less distinct blackish dots at bases of dorsocentrals, prescutellars, and inner posterior supra-alars; humeral and notopleural calli more yellowish, the former with two or three light yellowish setae, the latter well elevated; scutellum 1.7 times as wide as long, somewhat triangular, disk rather flat, lateral borders nearly perpendicular, blackish, obscured by light brownish-yellow tomentum, but not pubescent; mesophragma and postnotum colored and tomentose as on scutellum. Pleura (pl. 30, fig. 8) paler than notum, densely covered with reddish, yellowish-grey tomentum, with many fine whitish hairs, sternopleuron less tomentose so that it might be described as "black" and less pubescent; prothorax reddish yellow, with three or four short yellowish bristly hairs; sternopleuron with long whitish hairs on inferior border. All bristles black: scapulars not developed, anterodorsal margin with short blackish erect setae; humerals, anterior notopleurals and presuturals nearly the same length, the former pair finer and shorter, the latter pair stronger and longer; posterior notopleurals nearly half as long as anterior; dorsocentrals slightly ahead of line connecting anterior supra-alars, nearly as long as latter, parallel; prescutellars just ahead of level of inner posterior supra-alars, distinctly shorter and finer than latter, parallel; scutellars two pairs, the basal strongest and longest of all thoracic bristles, parallel, apical pair crossed, short but slightly longer than posterior notopleural; mesopleurals two, the lower fine and short; pteropleural and sternopleural distinct, both as long as upper mesopleural.

Abdomen (pl. 30, fig. 9) usually narrower than thorax, black, entirely obscured by brownish-grey tomentum; fifth tergum nearly as long as second, shorter than the two preceding terga together, posterior margin with about five pairs of black bristly hairs; genitalia black, appendages small and yellowish; sterna blackish, less tomentose.

Wing (pl. 30, fig. 1) distinctly longer than body, fully 2.4 times as long as wide, with apex rather narrowly rounded; R_1 gradually curved apically toward costa so that apex of pterostigma is narrowly pointed; R_{2+3} and R_{4+5} nearly straight and moderately divergent, the latter not bristled; m hardly curved apically not divergent from R_{4+5} at apex; r–m far beyond middle of $1M_2$, almost straight, hardly oblique, posterior end very slightly closer to wing tip; m-cu straight or slightly convex, the anterior end nearer wing-base than tip so that inferior angle of $1M_2$ is moderately pointed; pterostigma about three-fourths as long as second costal cell; anal cell distinctly shorter than basal, inferior angle more or less produced; anal lobe comparatively narrow. Wing blackish brown, base whitish subhyaline, many whitish subhyaline spots as follows: second costal cell with two very large quadrate spots, extreme base with one very narrow spot, all reaching from costa to subcosta and separated by narrow blackish-brown streaks, median spot extending posteriorly very narrowly to base of Cu, interrupted at posterior half of apex of basal cell, basal spot broadly extending posteriorly to basal half of anal cell but interrupted by dark base of radial vein and connected with former spot just below rs; pterostigma with a light reddish-yellow oval spot near its base, extreme base very narrowly subhyaline; R_1 with three indentations reaching R_{2+3}, the basal two situated very close together, the basal just beyond pterostigma larger than others, the apical at middle of apical half of mouth smallest and roundish, a very small round dot just below apical spot of second costal cell; R_3 with one roundish indentation and five small rounded spots, the spot near base is quite round, the next two just below first two indentations of R_1 almost always connected with latter, the fourth just below apical indentation of R_1 smallest, below it, but slightly beyond, one quite round spot, the indentation separated from tip of R_{2+3}; R with one round spot near r-m; R_5 with one very large semicircular indentation, occupying entire apex, and three round spots, the basal one far above m-cu larger than the remaining ones, the apical two just beyond middle almost perpendicular, the one along R_{4+5} brown and the other near m; $1M_2$ with two round spots along m, the basal before middle more or less larger than the other one situated immediately

***Protephritis assimilis*, new species**

Male: 1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, left antenna; 6, left palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, left foreleg; 12, left midleg; 13, left hindleg. Female: 10, abdomen, from above.

beyond r-m; $2M_2$ with one round and three equidistant somewhat oblong indentations, the former far from anterobasal corner of cell and near m; Cu with three round spots and three somewhat rounded indentations, the first just above middle of C_2+2A, the second just below middle of $1M_2$, and the third very near the second, first indentation just beyond tip of Cu more or less triangular, the second just before middle of apex, and the third near tip of cell almost always smaller than others; anal lobes smoky, with two to four rounded spots below second anal vein in one row, no spot above it. Halteres light reddish yellow, knob sometimes darkened; squamulae light yellowish grey, margins blackish.

Legs light reddish yellow, blackish pubescent. Forelegs (pl. 30, fig. 11) conspicuously shorter than others; femur distinctly longer than tibia, externoventral margin with three or four very long black bristly hairs, pubescence on externodorsal surface longer than that remaining; tibia conspicuously shorter than tarsus, ventral apex with very fine yellowish brushlike setae; first tarsal segment distinctly longer than the four following segments together, internoventral surface with short yellowish brushlike bristles, ventral apex with two black minute bristles, second to fourth segments with one pair of black minute bristles at ventral apex. Midleg (pl. 30, fig. 12) a little longer than hindleg; femur slightly shorter than tibia, externoventral margin with one row of black short bristly hairs on apical half; tibia distinctly longer than tarsus, black apical spur comparatively long, in addition one short black bristle on external apex; first tarsal segment conspicuously longer than the four following segments together, slightly longer than half the length of tibia, pubescence and bristles as in front tarsus. Hindleg (pl. 30, fig. 13) stronger than others; femur slightly longer than tibia, ventral surface with two rows of black short setae; tibia shorter than tarsus, curved outward slightly near base, pubescence on dorsal margins longer than that remaining; first tarsal segment conspicuously longer than half the length of tibia, longer than the four following segments together, gradually but slightly narrowed apically, pubescence and bristles somewhat as on midtarsus.

Length: Body 4.5–5 mm, wing 5–5.1 mm.

Types. Holotype, ♂, USNM 69381, Ishigaki Is., Feb. 24; allotype, Mt. Arisan, Formosa, Oct. 10, 1912 (NIAS); paratypes, 2 ♂, Ishigaki Is., Feb. 24 (BMH); ♂, Amami-Oshima Is., May 9 (NIAS), ♂, Mt. Arisan, Formosa, Oct. 10, 1912 (NIAS).

Genus *Ensina* Robineau-Desvoidy

Ensina Robineau-Desvoidy, 1830, p. 751.—Hendel, 1927, p. 171.—Shiraki, 1933, p. 460.

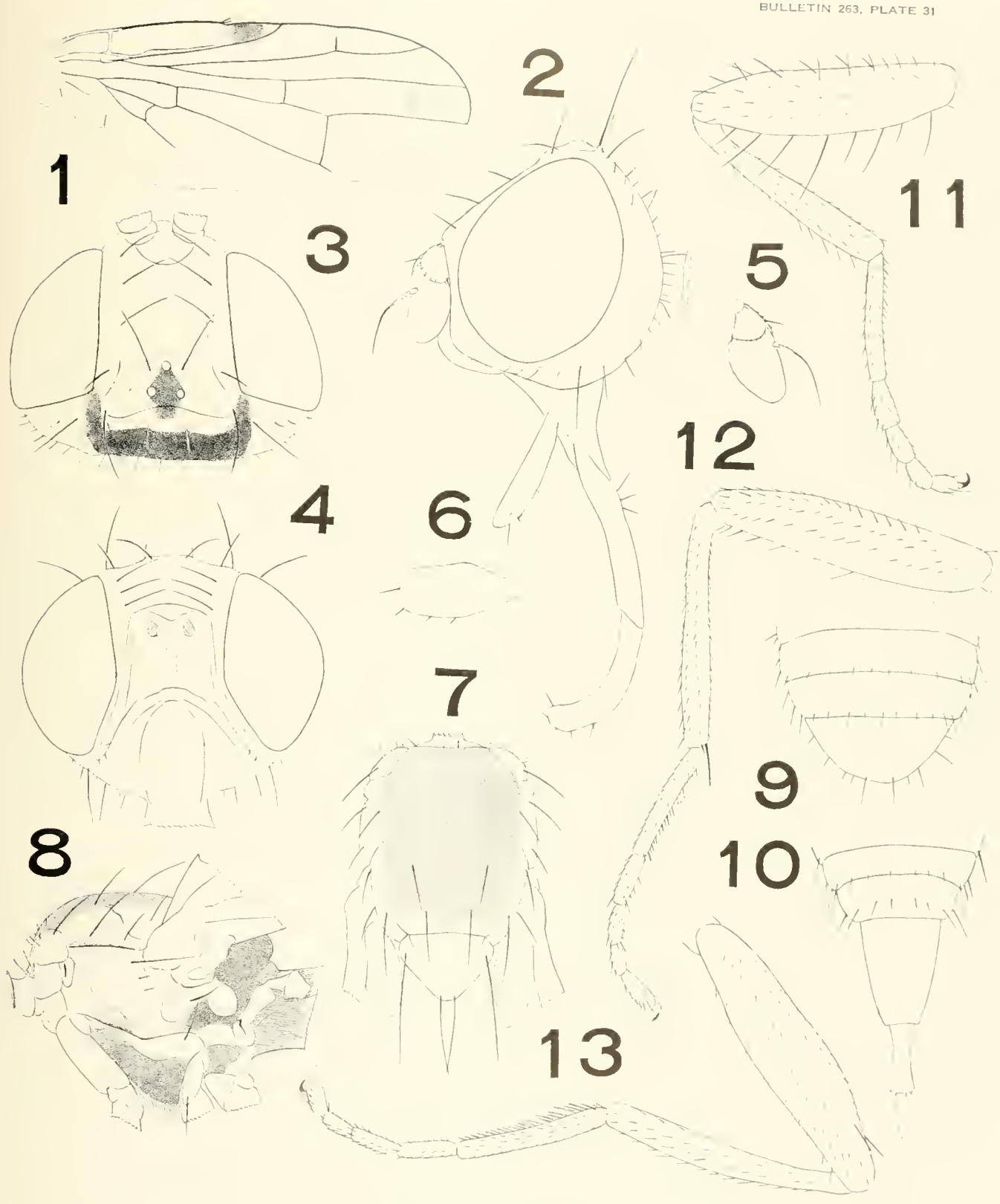
Ensina sonchi (Linné)

Plate 31

Musca sonchi Linné, 1767, p. 998.
Trypeta obsoleta Meigen, 1826, p. 345.
Ensina chrysanthemi Robineau-Desvoidy, 1830, p. 751.
Ensina herbarum Robineau-Desvoidy, 1830, p. 752.
Ensina pratensis Robineau-Desvoidy, 1830, p. 752.
Ensina linariae Robineau-Desvoidy, 1830, p. 753.
Ensina scorzonerae Robineau-Desvoidy, 1830, p. 753.
Ensina doronici Robineau-Desvoidy, 1830, p. 753.
Tephritis asteris Haliday, 1838, p. 186.
Ensina lacteipennis Hendel, 1915, p. 464.—Shiraki (in part), 1933, p. 465.

A light greenish-yellow species of very small size with nearly wholly hyaline wings.

Male.—Head a little wider than thorax, nearly 1.3 times as wide as long, nearly 1.26 times as wide as high, distinctly narrowed forward. Frons (pl. 31, fig. 3) 1.6 times as wide as one eye, slightly narrowed forward, lateral margins straight, flat, orange yellow; orbits comparatively broad, conspicuously whitish tomentose, with few white sparse pubescence; vertical calli very short, more or less fused with orbits, distinctly covered by a whitish tomentum; lunule moderate in size, more or less concave, light yellowish, obscured by whitish tomentum; ocellar triangle very large, orange yellow, with a black spot between ocelli, whitish tomentose and very sparsely pubescent, vertical transverse carina well delined, waxy yellowish. Face (pl. 31, fig. 4) light yellow, whitish tomentose, very short, conspicuously shorter than wide, nearly parallel-sided, moderately hollowed, with broad antennal grooves and distinct median longitudinal carina; orbits comparatively narrow, inner margins more or less reddish brown. Back of head (pl. 31, fig. 2) moderately swollen, upper portion flat, light greenish yellow, with a black large trapezoidal patch on upper portion, whitish tomentose, sparsely light yellowish pubescent; cheeks very narrow, genal groove brownish, vibrissal edges with short pale brownish bristles, Eye in profile moderately oblique, oval, upper angle distinctly narrowed, in front view inner margin slightly convex with inner angle very close to oral margin. All bristles brown, except postverticals, inner occipitals, and bristles of occipital rows, which are yellowish white. Ocellars divergent, conspicuously longer than superior fronto-orbitals and slightly longer than inferior fronto-orbitals; fronto-orbitals 1:3, the inferiors inwardly directed but not crossed; inner verticals convergent, longest of all head bristles, slightly longer than outer verticals, which are slightly longer than ocellars; postverticals parallel, slightly shorter than superior fronto-orbital; occipitals one pair, very short, as long



Ensina sonchi (Linné)

Male: 1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, right antenna; 6, left palpus; 7, thorax, from above; 8, thorax, from side; 9, apical part of abdomen, from above; 11, left foreleg; 12, right midleg; 13, left hindleg. Female: 10, apical part of abdomen, from above.

as bristles of occipital row, placed almost exactly behind inner verticals; three or four rather fine occipital bristles; genal bristle conspicuous. Antennae (pl. 31, fig. 5) inserted at middle of eye, attaining oral margin, almost always yellow, white tomentose; second segment comparatively small, nearly half as long as following segment, with a distinct black median bristle; third segment nearly 1.8 times as long as wide, distinctly narrowed toward round apex, ventral margin strongly convex; arista rather short, black, basal portion yellowish and microscopically pubescent. Palpi (pl. 31, fig. 6) whitish, large, fully 2.3 times as long as wide, nearly straight, strongly narrowed at base, apex blunt, with very few bristles.

Thorax nearly 1.5 times as long as wide, 1.2 times as long as high. Mesonotum (pl. 31, fig. 7) nearly as long as wide, blackish, with distinct light greenish-yellow lateral streaks, which extend straight from humeral calli to near lateral corners of scutellum through notopleural calli, wholly obscured by whitish tomentum, covered with a blackish very short fine pubescence; humeral calli not pubescent, but with some short yellowish bristles; notopleural calli quite bare; scutellum light greenish yellow, quite obscured by whitish tomentum, nearly 1.4 times as wide as long, flat, with distinct lateral carinae, lateral borders almost always yellow, bare. Pleura (pl. 31, fig. 8) light greenish yellow, lower two-thirds of sternopleuron except ventral border, portion just above hind coxa, hypopleuron, mesophragma, and postnotum, black, lower margin of mesopleuron more or less blackish, entire surface whitish tomentose; prothorax with three long yellowish-white bristle hairs; mesopleuron with some yellowish-white setae on upper and hind borders; upper borders of ptero- and sternopleuron with yellowish-white setae directed upward; yellowish-white pubescence along yellowish ventral border of sternopleuron rather dense and long. All bristles blackish brown: scapulars two pairs, fine, yellowish; humerals as long as anterior notopleural or presutural; posterior notopleurals slightly shorter than anteriors; dorsocentrals slightly ahead of level of anterior supra-alars, as long as prescutellars, almost always parallel but sometimes slightly convergent; prescutellars slightly ahead of line connecting inner posterior supra-alars, parallel, as long as the latter; scutellars two pairs, the basal pair longest of all thoracic bristles, almost always very slightly divergent, apical pair a little shorter than basal and crossed; mesopleural bristle only one, directed posteriorly; pteropleural almost always a little shorter than mesopleural, more or less curved, directed slightly upward; stenopleural as long as pteropleural, directed obliquely upward.

Abdomen (pl. 31, fig. 9) blackish, slightly dusted with greyish tomentum, blackish pubescent, second to fifth terga each with yellowish or reddish-yellow posterior margin; fifth tergum distinctly shorter than the two preceding terga together, posterior margin almost always with five pairs of blackish bristle hairs, the apical more or less conspicuous; genitalia moderate in size, shining orange yellow, blackish pubescent, appendages orange yellow.

Wing (pl. 31, fig. 1) longer than body, 2.5 times as long as wide, moderately narrowed at apex; costa with two very fine costal spines, bent very slightly inward just before middle of apex of R_1; R_1 moderately curved toward costa; R_{2+3} nearly straight, but bent into R_1 at two-thirds from base, from which point a distinct straight veinlet stands upright and often reaches bending of costa, this veinlet in numerous specimens quite obsolete; R_{4+5} bare, parallel to m; r-m below apex of R_1, nearer to middle of $1M_2$ than to its apex, very slightly convex but quite perpendicular; m-cu straight, parallel with r-m, distinctly longer than second section of anterior margin of $1M_2$; pterostigma nearly half as long as second costal cell, pointed, blackish, apical portion light yellowish, narrow basal portion hyaline to very slightly darkened; anal cell conspicuously shorter than basal cell, apical margin distinctly concave. Wings hyaline, with darkened spots as follows: R_1 with two spots, the apical at apex extending posteriorly into R_3, the bandlike second spot on veinlet, almost always conspicuous and extending from costa to just below R_{2+3}, rarely another faint spot below pterostigma; R_3 with a very faint apical spot at end of R_{2+3}; R_5 with three spots, the basal on r-m a very narrow band and almost always very faint, the distal below apical spot in R_1, broad, very faint, extending the entire width, the remaining spot at middle very small, dotlike and very faint; $2M_2$ with a very faint band on m-cu. Halteres light orange yellow; squamulae whitish hyaline, with margins yellowish.

Legs rather strong, yellow to light reddish yellow, blackish pubescent. Foreleg (pl. 31, fig. 11) slightly shorter than others: femur distinctly longer than tibia, externoventral margin with one row of five to seven long bristly yellowish or brownish hairs, dorsal surface with two rows of many shorter brownish bristly hairs; tibia shorter than tarsus, pubescence on dorsum longer than others; first tarsal segment nearly as long as four following segments together, brushlike bristles on internoventral surface yellowish and not conspicuously long. Midleg (pl. 31, fig. 12) nearly as long as hindleg: femur distinctly longer than tibia, dorsal surface with short blackish bristly hairs; tibia nearly as long

as the four basal tarsal segments together, with a black apical spur and very short black bristles at apex; first tarsal segment nearly as long as the three following segments together, externoventral margin with black short bristles, internoventral surface yellowish with brushlike bristles. Hindleg (pl. 31, fig. 13) strongest: femur conspicuously longer than tibia, distinctly narrowed toward each end, one pair of blackish bristly hairs near dorsal apex; tibia as long as the three basal tarsal segments together; first tarsal segment slightly longer than the three following segments together, yellowish brushlike bristles on internoventral surface rather long, externoventral margin with blackish bristly hairs.

Length: Body 1.8–3.2 mm., wing 2–3.4 mm.

Female.—Quite similar to male. Sixth abdominal tergum (pl. 31, fig. 10) slightly longer than preceding, with four or five pairs of marginal bristles; ovipositor long and depressed, first segment distinctly longer than fifth and sixth terga combined, almost always shining castaneous black with apical half yellowish brown, rather densely pubescent, second segment fully two-thirds as long as basal, apex widened and with two pairs of tiny black spines, ovipositor pointed at apex.

Length: Body (without ovipositor) 2–3 mm., wing 2.1–3.2 mm.

Material examined.—Iriomote Is.: 2 ♂, ♀, Jan. 7–21; Okinawa Is.: 55 ♂, 29 ♀, Mar. 24–Apr. 20; collected on *Erechtites valerianaefolia* Wolf and *Youngia japonica* L.

Remarks.—The present material is quite the same as Formosan *Ensina lactaepennis* Hendel, and there is no difference between it and European *E. sonchi* L.

Ensina sororcula (Wiedemann)

Plate 32

Trypeta sororcula Wiedemann, 1830, p. 509.
Ensina chilensis Macquart, 1843, p. 387, pl. 31, fig. 11.
Ensina vacillans Wollaston, 1858, p. 115.
Ensina humilis Loew, 1862a, p. 81.
Leptomyza variipennis van der Wulp, 1897, p. 143, pl. 3, figs. 3, 4.
Ensina bisetosa Enderlein, 1911, p. 455, figs. Y, Z.
Ensina bisetosa var. *nigrinotum* Enderlein, 1911, p. 456.
Ensina sororcula (Wiedemann).—Shiraki, 1933, p. 462.

One of the smallest species of all the Ryukyu fruit flies, dark brown, yellow pubescent, the wings brown with whitish subhyaline spots and the abdomen with paired spots.

Male.—Head slightly narrower than thorax, distinctly narrowed forward, wider than high, nearly as long as wide. Frons (pl. 32, fig. 3) nearly twice as wide as eye, distinctly narrowed forward, lateral margins straight, flat, orange yellow to light reddish brown, very often darkened on posterior half, between these two colorations a rather distinct transverse sulcus; orbits more or less elevated, white tomentose, with very sparse whitish pubescence; lunule greyish dusted, more or less swollen, far behind lunule an ill-defined arcuate sulcus; vertical calli narrow and long, nearly two-fifths as long as frons but not distinctly defined, whitish tomentose, very slightly convergent; ocellar triangle comparatively small, black or blackish, just behind which is a distinct transverse carina. Face (pl. 32, fig. 4) nearly as wide as one eye, nearly as long as wide, slightly broadened below, oral margin strongly produced, light yellowish, whitish tomentose; orbits comparatively broad, moderately widened below, distinctly whitish tomentose; vibrissal margins with minute brownish very sparse curved bristles, the upper two or three of which are quite erect and yellowish; antennal grooves rather deep and broad, more or less darkened. Back of head (pl. 32, fig. 2) moderately swollen, upper portion flat, blackish brown or black, eye-margins except median portion, upper corner, and lower border broadly yellowish, entirely greyish tomentose, ventral border with three or four long yellowish bristles, posterior border with short yellowish bristly hairs; cheeks comparatively narrow, yellowish, whitish tomentose, genal groove distinct and comparatively broad, vibrissal margins with short yellowish bristly hairs. Eye in profile oval, moderately oblique, upper angle narrowed, in front view inner margin broadly rounded. Antenna (pl. 32, fig. 9) inserted at middle of eye and close together, short, almost attaining oral margin, yellow to dirty orange yellow; second segment nearly half as long as third, very sparsely black pubescent along apical margin, without distinct median bristle; third segment broad, twice as long as wide, dorsal margin straight, ventral margin slightly convex, apex broadly rounded; arista microscopically pubescent, blackish, basal segments yellowish. Palpi (pl. 32, fig. 10) long and slender, distinctly broadened toward base, yellowish, somewhat darkened toward apex, bristles very sparse, the apical one conspicuously long. All bristles black, except upper superior fronto-orbital, postverticals, outer verticals, genal and bristles of occipital row yellowish white. Ocellars divergent, as long as lower superior fronto-orbitals; fronto-orbitals 2:2, upper superiors distinctly shorter than lowers, inferiors directed inward, hardly crossed, slightly finer than superiors; postverticals parallel, slightly longer than upper superior fronto-orbitals; inner verticals parallel, longest, nearly twice as long as lower superior fronto-orbitals, outer verticals nearly as long as latter; two or three whitish and several blackish bristles in occipital row; occipital bristles wanting.

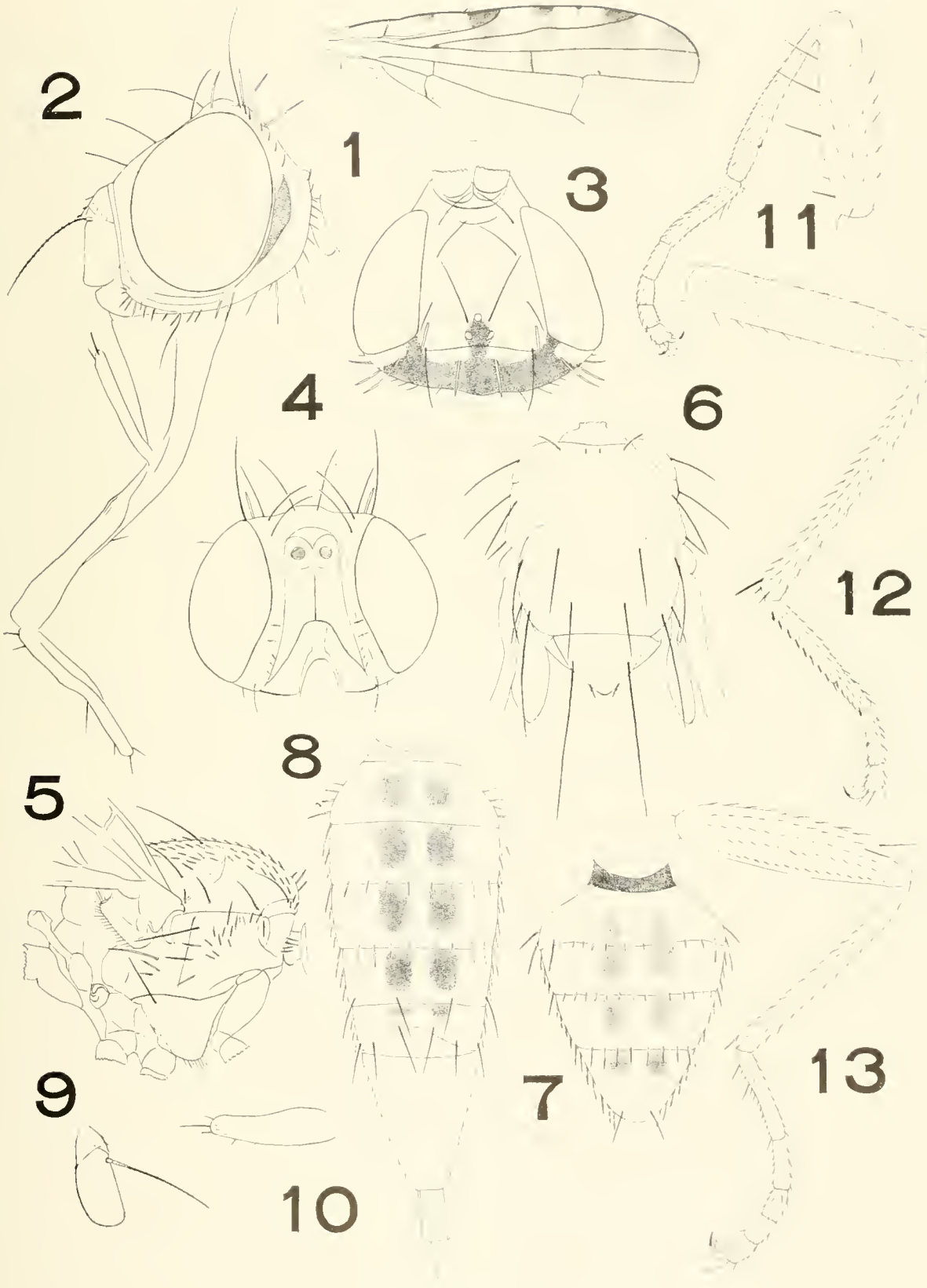
Thorax 1.4 times as long as wide, slightly longer than high, black, distinctly dusted with dense yellowish or brownish-grey tomentum, covered with yellowish pubescence. Mesonotum (pl. 32, fig. 6) slightly longer than wide, with three narrow indistinct brown longitudinal streaks not attaining posterior margin, the median streak almost always very fine and very often obsolete; humeral and notopleural calli almost always more yellowish tomentose and bare, but former with yellowish erect bristly hairs; scutellum three-fifths as long as wide, without distinct lateral carinae, disk without pubescence, posterior margin with yellowish setae, of which the two apical ones are conspicuous.

Pleura (pl. 32, fig. 5) less tomentose and pubescent than notum, the tomentum whitish grey, prothorax with short yellowish bristly hairs; superior border of mesopleuron with many short yellowish bristly hairs directed upward, posterior border with some yellowish bristles directed posteriorly, one or two of which are conspicuously long; pteropleuron with two or three whitish bristly hairs below yellowish pteropleural bristle, which is directed posteriorly; sternopleuron quite bare, but ventral margin with many rather long whitish hairs; mesophragma and postnotum very slightly whitish tomentose. All bristles black, except scapular and pteropleurals yellowish white. Humerals as long as presutural or anterior notopleurals, posterior notopleural very short; dorsocentrals very rarely two pairs; if so, one pair placed ahead of sutures, remaining pair in normal position, normal pair nearly parallel and distinctly ahead of level of anterior supra-alars but nearer to it than to suture; prescutellars slightly ahead of line connecting inner posterior supra-alars, shorter than the latter, as long as dorsocentrals; outer scapulars conspicuous, inners very weak; scutellars one basal pair, the longest of all thoracic bristles, median pair of whitish marginal setae rather conspicuous and may be mistaken for apical bristles.

Abdomen (pl. 32, fig. 7) distinctly longer than thorax, black, entirely obscured by yellowish or brownish-grey tomentum, covered with rather long sparse yellowish pubescence, one pair of large brown rather ill-defined patches on each of the terga except basal one, the latter uniformly blackish; fourth tergum with four pairs of long yellowish marginal bristles, the outer pair sometimes black; fifth tergum with one pair of long black marginal bristles; genitalia comparatively small, shining black or brown.

Wing (pl. 32, fig. 1) very slightly longer than the body, 2.8 times as long as wide, apex rather narrowly rounded, with one or two short costal spines; subcosta obliquely directed toward costa apically; R_{2+3} very slightly sinuate; R_{4+5} not bristled, straight, parallel with m; r-m perpendicular, distinctly beyond middle of $1M_2$ and end of R_1; m-cu straight or very slightly wavy, convergent with r-m; pterostigma nearly half as long as second costal cell, pointed; anal cell nearly as long as basal cell, with a very short pointed lower angle. Basal one-third of wing hyaline, remainder brownish with many hyaline spots. Pterostigma blackish, extreme posterior base hyaline; second costal cell hyaline with a brown median spot along costa, immediately behind this spot two ill-defined brownish spots, the anterior at base of R_{2+3}, the posterior at inferior apical angle. Hyaline spots in brownish portion as follows: R_1 with a large spot just beyond pterostigma, two smaller closely placed spots beyond middle; R_3 with six spots, the apical just beyond end of R_{2+3}, almost always the largest and connected with small lower one, the second just below the two distal spots of R_1, the following two just below proximal large spot in R_1, the remaining spot occupying entire basal portion; R_5 with five spots, the basal very large, filling basal one-fourth of cell, the following spot at about middle along m, small and round, the two subapical below lower apical spot of R_3 transversely situated, and the apical spot just at inferior corner of cell semicircular, often in addition two very small faint transverse spots; R with two faint spots; $1M_2$ with five spots, the proximal very large, occupying basal one-third, the next two below the apical spot of R bandlike, connected to each other, and the distal two also transversely united to each other and closer to preceding spots than to m-cu; $2M_2$ with three round equidistant spots along wing margin and a similar spot near anterior basal corner of cell; Cu with four spots, the basal very large, occupying basal two-fifths, the median two transverse, always connected to each other, the remaining spot near apex, in addition one small very faint spot at end of anal vein. Halteres light reddish brown; squamulae greyish.

Legs light reddish yellow to light reddish brown, the basal two-thirds of femora blackish, but often front and middle pairs pale colored throughout entire length of ventral surface, black pubescent. Foreleg (pl. 32, fig. 11) conspicuously shorter than others as usual: femur very slightly longer than tibia, externoventral margin with one row of four or five black long bristly hairs, dorsal surface with five or six bristly hairs, the basal three or four almost always yellowish white; tibia very slightly shorter than tarsus, externoventral apex almost always with two very short whitish bristles; first tarsal segment nearly half as long as tibia, slightly longer than the four following segments together, brushlike bristles on internoventral surface rather fine,



Ensina sororcula (Wiedemann)

Male: 1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, thorax, from side; 6, thorax, from above; 7, abdomen, from above; 9, right antenna; 10, left palpus; 11, left foreleg; 12, left midleg; 13, left hindleg. Female: 8, abdomen, from above.

the two near base yellowish white and conspicuously long. Midleg (pl. 32, fig. 12) distinctly longer than hindleg; femur distinctly shorter than tibia, pubescence on ventral surface long and conspicuous near dorsal surface; tibia longer than tarsus, with one black apical spur, black short bristles in addition; first tarsal segment nearly one-third as long as tibia, shorter than the four following segments together, externoventral margin with one row of short black bristles, the brushlike bristles on the internoventral surface rather sparse. Hindleg (pl. 32, fig. 13): femur as long as tibia, one pair of black long bristly hairs near dorsal apex; tibia as long as tarsus, with one short brownish or black apical bristle; first tarsal segment shorter than the three following segments together, brushlike bristles on ventral surface yellowish and rather dense, externoventral margin almost always with two long bristles.

Length: Body 2–3 mm, wing 2.9–3.2 mm.

Female.—Quite similar to male (pl. 32, fig. 8). Second to sixth abdominal terga each with a pair of brown spots; last tergum as long as or very slightly longer than preceding, with a transverse triangularly curved sulcus, its posterior portion yellowish and bare and its anterior portion pubescent as on preceding terga, with three pairs of black long marginal bristles; fifth tergum with two pairs of black long marginal bristles. Ovipositor comparatively long and depressed; basal segment longer than the two preceding abdominal terga together, with distinct lateral carinae, shining dark castaneous to black, very sparsely black pubescent; second segment almost always castaneous; ovipositor yellowish, sharply pointed.

Length: Body (without ovipositor) 1.8–3.2 mm, wing 2.1–3.5 mm.

Material examined.—Numerous males and females from Iriomote Is., Jan. 10–21, Ishigaki Is., Jan. 23–Feb. 27, Miyako Is., Mar. 4–7, Okinawa Is., Mar. 18–Apr. 23, and Amami-Oshima Is., May 1–21; all in NIAS, collected on the *Bidens pilosa* var. *rediata* Schultz.

Subfamily Euribiinae

Genus *Actinoptera* Rondani

Actinoptera Rondandi, 1871, p. 162.—Shiraki, 1933, p. 446.

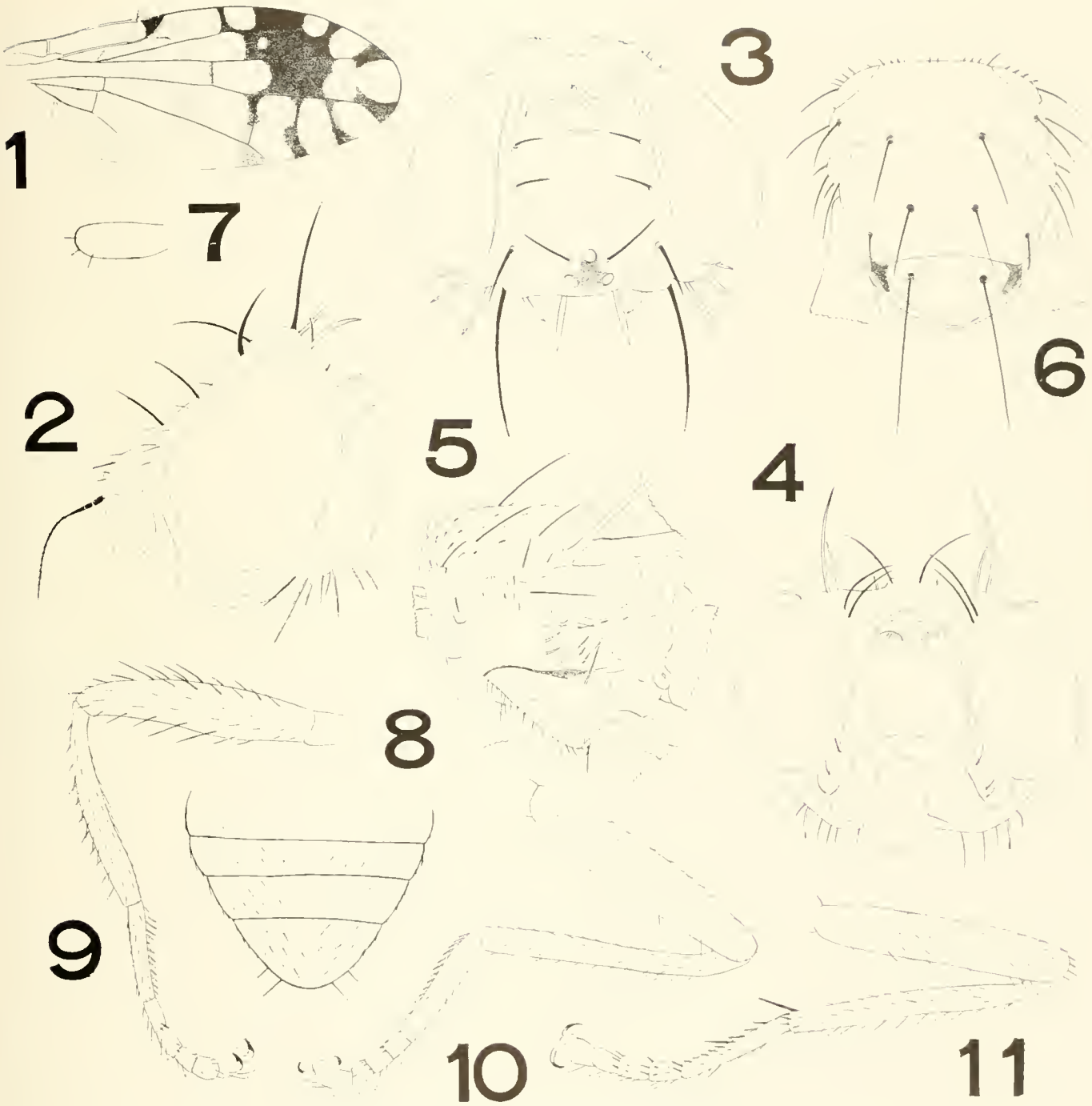
Actinoptera, trypancoides, new species

Plate 33

This species is distinguished by the large subhyaline spots of the wings and the oblique pubescence on the abdomen.

Male.—Head as wide as thorax, nearly 1.5 times as wide as long, nearly 1.3 times as wide as high, moderately narrowed apically. Frons (pl. 33, fig. 3) nearly twice as wide as one eye, distinctly narrowed forward, flat, orange yellow, more or less darkened toward vertex; orbits distinctly dusted with white tomentum, with white pubescence; lunule comparatively large, well elevated, light yellowish; vertical calli very short, ill defined, more or less whitish tomentose; ocellar triangle somewhat blackish, slightly obscured by whitish tomentum, a distinct transverse carina present. Face (pl. 33, fig. 4) brownish, obscured by greyish tomentum, more or less hollowed, distinctly wider than long, with rather broad antennal grooves; orbits rather narrow but distinctly broadened below, whitish tomentose, vibrissal margins with short whitish bristly hairs. Back of head (pl. 33, fig. 2) moderately swollen below, black to yellowish below, entirely obscured by whitish tomentum, ventral margin with long bristly whitish hairs; cheeks narrow, yellowish, whitish tomentose, with rather distinct genal groove. Eyes large, inner margin in front view rather strongly convex, in profile fully 1.3 times as long as wide, somewhat oblique, anterior margin broadly rounded. All bristles mostly black: ocellars divergent, longer than superior fronto-orbitals but finer; fronto-orbitals 1:2, the superiors stronger and longer than the inferiors, which are directed inward but not crossed; inner verticals strongest and longest, parallel, outers whitish and nearly half as long as inners; postverticals whitish, slightly divergent, slightly shorter than outer verticals, distinctly shorter than whitish occipitals, occipitals one pair; bristles of occipital rows whitish, only two, but rather long; genal bristle whitish. Antennae (pl. 33, fig. 2) short, not attaining oral margin, dull orange yellow; second segment more or less white tomentose, more than half as long as third segment, with black median bristle; third segment nearly two thirds as wide as long, quadrate, dorsal apex roundly pointed; arista entirely black, microscopically pubescent. Palpi (pl. 33, fig. 7) yellowish, comparatively short, quite straight, apex with very few black short bristles.

Thorax distinctly longer than wide, as wide as high, evenly blackish and conspicuously obscured by grey tomentum, pubescence whitish and rather sparse. Mesonotum (pl. 33, fig. 6) slightly wider than long, with black spot at root of each bristle; humeral and notopleural calli not pale, the former with short whitish bristles, latter bare; scutellum longer than half the width, without lateral carinae, one pair of black spots at roots of basal scutellars, lateral bases with ill-defined dark spot. Pleura (pl. 33, fig. 5) almost bare; prothorax with one transverse row of three whitish bristly hairs;



***Actinoptera trypaneoides*, new species, male**

1, right wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, thorax, from side; 6, thorax, from above; 7, left palpus; 8, abdomen, from above; 9, left foreleg; 10, left hindleg; 11, left midleg.

mesopleuron with blunt whitish setae on dorsal portion and about three whitish bristles along posterior margin below brownish mesopleural bristle; pteropleuron with about three short bristly whitish hairs below brownish pteropleural bristle, which is directed posteriorly; sternopleuron with fine whitish pubescence, sternopleural bristle whitish and directed upward; mesophragma and postnotum without any marking. All bristles more or less brownish, never blackish: Humerals as long as presuturals or anterior notopleural; posterior notopleurals rather whitish, nearly half as long as anteriors, distinctly stout; dorsocentrals conspicuously closer to suture than to level of anterior supra-alars, rather divergent, slightly longer than prescutellar, the latter situated distinctly ahead of line connecting inner posterior supra-alars, far ahead of posterior margin of mesonotum; scutellars one pair, longest of all thoracic bristles, parallel.

Abdomen (pl. 33, fig. 8) shorter than thorax, as wide as the latter, black, entirely obscured by brownish-grey tomentum and covered with sparse whitish pubescence directed obliquely inward; fifth tergum nearly as long as the two preceding terga together, with two pairs of brownish bristles along posterior margin; genitalia moderate in size, shining black.

Wing (pl. 33, fig. 1) distinctly longer than body, fully 2.5 times as long as wide, with apex narrowly rounded; costa rather strongly curved, with two black costal spines; subcosta nearly straight, apical portion quite obsolete; R_{2+3} sinuate on apical half; R_{4+5} not bristled, straight, slightly divergent from straight m; r-m straight, perpendicular, much closer to middle of $1M_2$ than to m-cu, the latter more or less convex; pterostigma very short, pointed, nearly one-third as long as second costal cell; anal cell distinctly shorter than basal cell, apical margin straight, inferior angle nearly 90°. Wing blackish brown, basal half whitish subhyaline with whitish subhyaline spots as follows: pterostigma blackish, the extreme base greyish subhyaline; R_1 with two spots, the proximal one just beyond apex of pterostigma about twice as long as distal and occupying the entire width, the distal spot very close to proximal extending to R_{2+3}; R_3 with four spots, two round along apex, a smaller spot just beyond apex of R_1, and remaining one at middle of apex reaching to R_{4+5}, the basal half almost subhyaline, a light brownish narrow oblique cross band at about the middle beyond subhyaline portion a very small yellowish-brown dot; R_5 with four spots, the proximal one very large and very close to r-m; the distal one occupying entire apex, just in front two transversely connected spots below distal spot in R_3; $1M_2$ with four spots, of which three are equidistant, the distal two attaining m, the remaining connected to round spot at anterior corner; $1M_2$ almost subhyaline, with a faint brownish narrow median cross band extending into middle of Cu. Halteres reddish yellow; squamulae dirty light brownish.

Legs light reddish yellow, brownish pubescent, hind femora more or less blackish basally. Foreleg (pl. 33, fig. 9) shorter than the other two pairs; femur longer than tibia, dorsal surface with two pairs of long blackish bristly hairs, externoventral margin with about six blackish bristly hairs, the median two conspicuously long; tibia as long as tarsus, pubescense on dorsal surface longer than on others; first tarsal segment nearly half as long as tibia, nearly as long as the four following segments together, brushlike bristles on internoventral surface yellowish white and rather dense. Midleg (pl. 33, fig. 11) longer than hindleg: femur a little shorter than tibia, no conspicuous bristly hairs; tibia a little longer than tarsus, with one black apical spur, pubescence on dorsal surface rather conspicuous; first tarsal segment distinctly shorter than half the length of tibia, as long as the four following segments together, externoventral margin with blackish bristles, the median one conspicuously long and nearly as long as tibial spur, brushlike bristles as those on foretarsus. Hindleg (pl. 33, fig.10) somewhat thicker than the others: femur as long as tibia, without conspicuous bristly hairs; tibia distinctly longer than tarsus, pubescent as in midtibia; first tarsal segment hardly half as long as tibia, slightly longer than four following segments together, ventral surface bristled as in midtarsus.

Length: Body 2.2 mm, wing 3 mm.

Holotype.—Male, Iriomote Is., Jan. 13 (NIAS).

Genus *Elaphromyia* Bigot

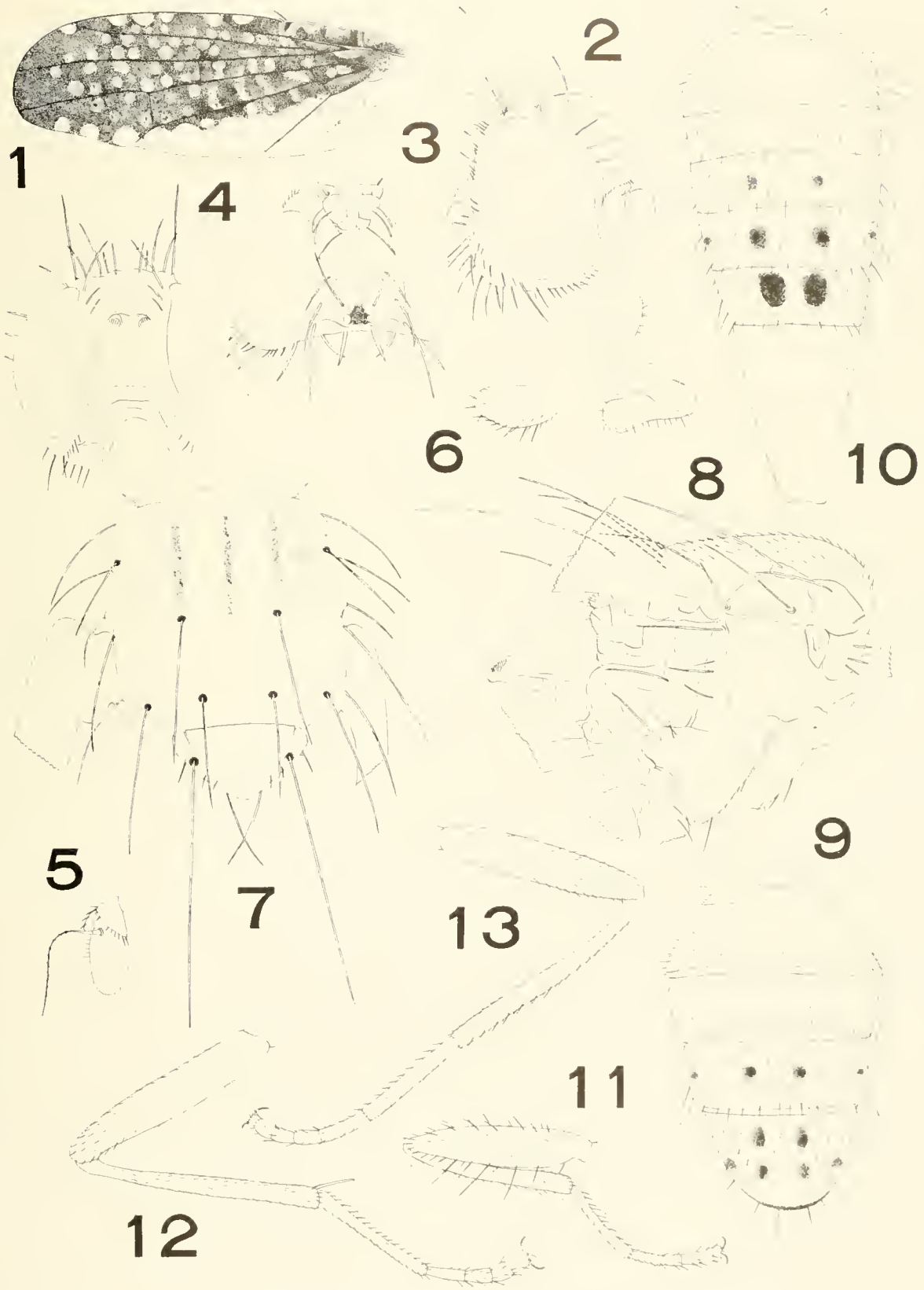
Elaphromyia Bigot, 1859, p. 214.—Shiraki, 1933, p. 393.
Mesanopia Enderlein, 1913, p. 369.
Parallelopteva Bezzi, 1913, p. 155.

Elaphromyia incompleta punctata, new subspecies

Plate 34

This subspecies differs from typical *Elaphromyia incompleta* Shiraki (1933, p. 398, fig. 79, pl. 11, fig. 6) in the abdominal pattern. A brownish species of small size, with narrow dark brown wings containing numerous subhyaline spots, reddish-yellow legs, and blackish spots on the last two (male) or three (female) abdominal terga.

Male.—Head as wide as thorax, 1.7 times as wide as long, nearly 1.3 times as wide as high. Frons (pl. 34, fig. 3) greyish yellow, with broad lateral borders somewhat irregularly darkened, tomentose and very inconspicuously pubescent, wider than one eye, nearly parallel-sided, moderately hollowed at middle; orbits



***Elaphromyia incompleta punctata*, new subspecies**

Male: 1, left wing; 2, head, profile; 3, head, from above; 4, head, from front; 5, left antenna; 6, right palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, left foreleg; 12, right midleg; 13, left hindleg. Female: 10, abdomen, from above.

distinctly elevated, distinctly pubescent; vertical calli comparatively large, extending to a point just ahead of middle of frons, shining; lunule elevated, somewhat paler than frons, distinctly tomentose; ocellar triangle comparatively large, blackish, ocelli equidistant and rather large, especially the median one conspicuous, a rather sharp transverse carina present. Face (pl. 34, fig. 4) rather narrow, slightly broadened below, slightly wider than long, moderately hollowed, oral margin rather strongly produced forward, yellow, obscured by whitish tomentum; orbits very narrow, more of less elevated, distinctly whitish tomentose; antennal grooves not distinct; epistoma rather broad, distinctly white tomentose. Back of head (pl. 34, fig. 2) slightly hollowed, lower portion moderately swollen, black, eye-margins and lower swellings light yellow, with bristly yellowish-white hairs on lower portion, a sparse black pubescence toward the eye-margins; cheeks linear, without distinct genal groove, light yellow, lower margin with short bristly black curved hairs extending to vibrissal margin where they become distinctly shorter. Eyes large, inner margin in front view slightly convex, in profile oblong, but posterior margin less convex and upper angle narrowly rounded. All bristles almost brownish yellow: ocellars divergent, far apart at bases, slightly shorter than lower superior fronto-orbitals; fronto-orbitals 2:3, the upper superiors distinctly shorter than lower superiors, divergent, inferiors more or less crossed, the lowest shorter and the two uppers nearly as long as upper superiors; postverticals strong but short, more or less divergent; inner verticals longest of all head bristles, slightly divergent, outer verticals whitish, nearly one-third as long as former; occipitals only one pair, whitish, nearly as long as postverticals, directed distinctly inward; bristles of occipital row composed of almost four stout whitish ones intermixed with black fine setae; genal bristle not more conspicuous than bristly hairs on swelling of back of head. Antennae (pl. 34, fig. 5) inserted at middle of eye, light yellowish, not attaining oral margin; second segment nearly half as long as the following, median bristle not conspicuous; third segment nearly twice as long as wide, oblong, dorsal margin with rather long ciliation; arista black, basal segments yellowish, microscopically pubescent. Palpi (pl. 34, fig. 6) yellowish white, comparatively broad, ventral margin distinctly convex and with black long bristly hairs.

Thorax nearly 1.4 times as long as wide, slightly longer than high. Mesonotum (pl. 34, fig. 7) nearly as wide as long, blackish, entirely obscured by dense yellowish-grey tomentum, covered with many fine blackish hairs, with three brown longitudinal stripes, the median narrower than remaining and extending to level of roots of dorsocentral bristles, the outer extending from inner corners of humeral calli to just ahead of roots of dorsocentral bristles through inner ends of suture, roots of all bristles distinctly black; humeral calli comparatively small, yellowish, with one or sometimes two whitish short bristles; notopleural calli rather conspicuous, never pale; scutellum 1.7 times as wide as long, triangular, more or less paler than mesonotum, obscured by a more yellowish tomentum, with an ill-defined yellowish-grey median longitudinal stripe, disk slightly convex and not pubescent, lateral borders rounded and very sparsely pubescent. Mesophragma and postnotum blackish, covered with whitish tomentum. Pleura (pl. 34, fig. 8) yellow, upper portion of mesopleuron blackish, metapleuron distinctly obscured by whitish tomentum, very sparse, distinct, yellowish setae on blackish portion of mesopleuron; prothorax with three or four stout but short yellowish bristles; ventral border of sternopleuron with long yellowish hairs, one of which is conspicuously long and bristly. All bristles mostly brownish; scapulars almost always poorly developed; humerals slightly longer than presuturals or anterior notopleural; posterior notopleural slightly curved, fully half as long as anterior; dorsocentrals distinctly ahead of a line connecting anterior supra-alars, the latter longer than presutural, as long as former; prescutellars parallel, just ahead of level of inner posterior supra-alars, the latter conspicuously longer than the former, as long as outer posterior supra-alars; basal scutellars longest of all thoracic bristles, but only slightly longer than inner posterior supra-alars, apical pair nearly one-third as long as basal, crossed; mesopleurals two or sometimes three, in the latter case the lowest conspicuously short; pteropleural and sternopleurals nearly as long as upper mesopleural, the former directed posteriorly and the latter upward.

Abdomen (pl. 34, fig. 9) nearly as long as head and thorax together, a little narrower than thorax, nearly 1.4 times as long as wide, yellow, somewhat reddish apically, moderately shining, sparsely blackish pubescent; fourth tergum with four equidistant small round blackish spots on median transverse line; fifth tergum nearly 1.5 times as long as preceding, with eight blackish roundish small spots, two near anterior margin, the remaining ones just behind median transverse line in one row, the two outer spots situated close together, the two anterior spots sometimes connected with the two median posterior ones forming two longitudinal stripes, posterior margin black, with about three pairs of distinct black bristly hairs; genitalia conspicuous, yellow, bases of claspers black.

Wing (pl. 34, fig. 1) slightly longer than body, nearly 2.8 times as long as wide, rather parallel-sided, apex evenly rounded; costal vein rather strongly curved apically, with two black costal spines, one of which is very short; R_1 moderately curved upward so that tip of pterostigma is sharply pointed; R_{2+3} nearly straight, quite divergent from straight R_{4+5}, the latter almost parallel with m; r-m and m-cu straight, parallel and perpendicular, the former closer to middle of $1M_2$ than to its apex; pterostigma more than two-thirds as long as second costal cell; anal cell distinctly shorter than basal cell, apical margin straight, inferior angle 90°. Wing blackish brown, anal lobe and large posterior portion of Cu greyish, with many whitish and light brownish spots as follows: in costal cell four ill-defined light brownish but large costal indentations, the basal very close to apex of first cell, and the remaining in second cell; in pterostigma one near apex somewhat rounded, extreme base of cell sometimes hyaline; in R_1 four whitish indentations and about 10 light brownish spots, the former not equidistant, distal three at about middle and very close together, basal just beyond tip of pterostigma, spots in one row along R_{2+3} from base to behind apical two indentations; only one whitish indentation in R_3 just beyond tip of R_{2+3}, many brownish spots in two irregular rows; in $2M_2$ three distinctly round whitish indentations, basal at inferior corner and remaining two at about middle, four light brownish spots in basal half; three large whitish round spots along apex of Cu, and another three round whitish spots along anal vein, in addition about four small whitish spots and two small light brownish ones toward base; anal lobe with two rows of round whitish spots, the anterior row consisting of five and posterior row of four; many light brownish spots in irregular pattern in remaining portions. Halteres reddish yellow, stalk light yellow, squamulae dark brown.

Legs light yellow, brown pubescent. Foreleg (pl. 34, fig. 11) shortest; femur with brown bristly hairs in two rows on dorsal surface, externoventral margin with about four long brownish bristly hairs; tibia slightly shorter than femur or tarsus; first tarsal segment as long as the four following segments together, slightly longer than half the length of tibia, brushlike bristles on internoventral surface yellowish white, bristles along externoventral margin brownish and rather sparse. Midleg (pl. 34, fig. 12) slightly longer than hindleg; femur slightly shorter than tibia, without distinct bristly hairs; tibia as long as tarsus, with a single conspicuously long and light yellowish apical spur; first tarsal segment longer than half the length of tibia, or the four following segments together, bristle rows on ventral surface as in front tarsus. Hindleg (pl. 34, fig. 13): femur shorter than tibia; tibia more or less curved near base, nearly as long as tarsus, dorsal surface with distinct brown setae in two rows; first tarsal segment nearly half as long as tibia, slightly shorter than the four following segments together, bristled as in midtarsus.

Length: Body 3.8–4 mm, wing 4–4.2 mm.

Female.—Similar to male. Sixth abdominal tergum (pl. 34, fig. 10) slightly shorter than fifth, posterior margin black, one pair of large black median spots; fifth tergum with two pairs of blackish spots, the very small to obsolete outer pair placed extremely laterad; fourth tergum with one pair of blackish median spots sometimes undeveloped. Basal segment of ovipositor as long as the four preceding abdominal terga together, with distinct lateral margins, strongly shining reddish yellow, rather fine pubescent, with posterior margin black, two small median black spots at base.

Length: Body (without ovipositor) 3.2–3.5 mm, wing 3.8–4.2 mm.

Types.—Holotype, ♂, USNM 69382, Okinawa Is., Apr. 20; allotype, ♀, Okinawa Is., Apr. 23 (USNM); paratypes,: (BMH and NIAS) Okinawa Is., 5♂, Mar. 27, Apr. 17, and 3♀, Mar. 27, Apr. 23; Amami-Oshima Is., 2♂, May 1, 20, and 7♀, Apr. 29, 30, May 1–7.

Subfamily Schistopterinae

Genus *Rhabdochaeta* de Meijere

Rhabdochaeta de Meijere, 1904, p. 109.—Shiraki, 1933, p. 483.

Rhabdochaeta asteria Hendel

Plate 35

Rhabdochaeta asteria Hendel, 1915, p. 462, pl. 9, fig. 18.—Shiraki, 1933, p. 486.

A small blackish species distinguished by two pairs of scutellar bristles and by the upper inferior fronto-orbital bristle which does not resemble the blade of a sword.

Male.—Head as wide as thorax, distinctly higher than long, 1.5 times as wide as long. Frons (pl 35, fig. 4) yellowish white, fronto-orbitals paler, nearly 2.6 times as wide as one eye, hardly narrowed forward, lateral margins straight, flat; orbits well defined throughout the entire length, more or less elevated; vertical calli long, extending to middle of frons; ocellar triangle comparatively small, more or less blackish, an ill-defined transverse carina present; lunule narrow, slightly brownish. Face (pl. 35, fig. 3) greyish white, with a pair of darker spots, comparatively small, strongly narrowed at middle, allowing anterior angles

of eyes to be moderately roundly produced into face, strongly hollowed at middle so that oral margin and portion just below antennae strongly produced forward; antennal grooves very narrow, attaining oral margin; orbits very narrow, distinctly whitish tomentose; epistoma prominent with a pair of faint dark spots. Back of head (pl. 35, fig. 2) rather flat, moderately swollen below, light yellow apical half black, leaving entire surface of eye-margins and extreme vertex conspicuously covered with whitish tomentum, many long white bristly hairs on lower margin, black setae and one conspicuous white bristle present above genal bristle; cheeks narrow, yellowish white, genal groove faint; vibrissal margins with a few white bristly hairs on lower portion, a few minute setae at its angle. Antennae (pl. 35, fig. 5) inserted just above middle of eye, light yellow, long, distinctly exceeding face; second segment comparatively short, median bristle conspicuous and black, with some short black bristly setae along apical margin and two or three long white bristles at inferior apex; third segment four times as long as preceding, gradually narrowed toward pointed apex, which possesses a minute white style, dorsal border brownish black, microscopically black pubescent on dorsal half and white on remainder; arista twice as long as third segment, white, basal segments light yellow, microscopically pubescent. Palpi (pl. 35, fig. 6) light yellow, long and narrow, narrowed toward pointed apex, dorsal margin more convex than ventral margin, the former with about two rows of short black bristles, latter with short black bristles and five or six long bristles, the apical three blackish, remaining ones white. All bristles black and white: ocellars white, very strong, rather swordlike, far apart, divergent, far ahead a pair of "frontal bristles" about middle of frons; fronto-orbitals 2:3, upper superiors white and swordlike, conspicuously shorter than lowers, which are dark colored, two upper inferiors black and longer than lower superiors, lowest inferior pair white, short and swordlike; inner verticals slightly darkened, conspicuously strong, almost six times as long as outers, which are white and swordlike, two short whitish bristles between inner and outer verticals, one close to inner verticals distinctly longer than the other, and one blackish and finer; postverticals white, as long as and very slightly more slender than ocellars, almost convergent, directed distinctly forward, at level of postverticals behind inner verticals one white swordlike bristle (inner occipital); bristles of occipital row of three white blunt and some shorter black ones, the uppermost (outer occipital) white and situated near occipital bristle; genal bristle black, rather weak, a somewhat stronger white bristle just above it. Inner margins of eyes when viewed from front roundly but rather narrowly produced into face below antennal bases; in profile nearly perpendicular, posterior margin distinctly convex, upper angle less rounded than lower angle.

Thorax longer than wide, as wide as high. Mesonotum (pl. 35, fig. 7) nearly as wide as long, black humeral and notopleural calli yellowish, obscured by greyish tomentum and covered with rather sparse whitish and black pubescence, insertions of bristles distinctly black, two pairs of distinct white erect setae at middle, one pair just behind posterior margin and other just behind level of presutellars longer and stronger than the pubescence scattered over notum. Scutellum nearly twice as wide as long, colored and tomentose as on mesonotum, with large, ill-defined reddish-yellow apical and small basal spots, bare, one short whitish bristly hair near basal corner. Pleura (pl. 35, fig. 8) black, prothorax yellowish, sometimes the sutural borders paler, slightly greyish tomentose; prothorax with short whitish bristles; mesopleuron with sparse white and black pubescence; pteropleuron with one or two rather distinct bristly white hairs; sternopleuron black, microscopically pubescent, ventral border with dense long black hairs, some of which on ventral angle are yellowish, in addition one long yellowish bristle. Mesophragma and postnotum entirely black, obscured by greyish tomentum. All bristles black except scapulars, apical scutellars, and sternopleurals, which are distinctly white; scapulars one pair, very short, and obtusely pointed; humerals as long as presuturals, slightly shorter than anterior notopleural, the latter nearly twice as long as posterior notopleural, which is distinctly straight; dorsocentrals conspicuously behind level of anterior supra-alars, longer than presuturals, slightly divergent; presutellars distinctly behind line connecting inner posterior supra-alars, which are longer than former; scutellars two pairs, the basal longest of all thoracic bristles but shorter than those of mesonotum, parallel, apical pair very short and crossed; mesopleurals one or sometimes two, pteropleural and sternopleural bristles one.

Abdomen (pl. 35, fig. 9) nearly as long as thorax, distinctly broader than the latter, blackish, obscured by greyish dense tomentum and covered with rather sparse whitish pubescence, in fresh specimens an ill-defined yellowish-grey tomentose median longitudinal stripe almost throughout entire length; fifth tergum as long as third and fourth terga together, extreme apex shining black, posterior margin with about three pairs of whitish long bristles; sterna more or less yellowish brown; genitalia shining castaneous brown-appendages yellowish.

Rhabdochaeta asteria Hendel

Male: 1, left wing; 2, head, profile; 3, head, from front; 4, head, from above; 5, right antenna; 6, left palpus; 7, thorax, from above; 8, thorax, from side; 9, abdomen, from above; 11, left foreleg; 12, left midleg; 13, left hindleg. Female: 10, abdomen, from above.

Wing (pl. 35, fig. 1) oblong, nearly as long as body, hardly half as wide as long, gradually narrowed toward narrowly rounded apex; costal vein moderately convex, with conspicuous incision at base of pterostigma, three black costal spines; subcostal vein distinctly curved into second costal cell; R_1 and R_{2+3} rather strongly curved toward costa apically; R_{4+5} nearly straight, very sparsely bristled from base to far beyond r-m; m strongly sinuate medially, slightly divergent from R_{4+5} apically; r-m just beyond middle of $1M_2$, straight, oblique, its anterior end nearer to wing tip; m-cu slightly convex, oblique, its anterior end closer to wing base; pterostigma very short, one-third as long as second costal cell, moderately pointed; anal cell distinctly shorter than basal cell, apical margin straight, inferior angle more or less pointed. Wings translucent, with a large roundish brown median patch extending from R_{2+3} to posterior wing margin and from apex of basal cell to base of $2M_2$, with ten very narrow rays and one slightly broader blackish ray. Rays never doubled, approximately subequal in width, three in costal cell, the first on humeral crossvein, the second in middle of second costal cell and the third at apex; two in R_1, one at tip of pterostigma and the other in center of apex, between them a short but broader ray attaining middle; two in R_3, one at tip of R_{2+3} and other in middle of mouth, a very short ray attaining R_{2+3}, situated between first ray and the preceding one; in R_5 two, along R_{4+5} and m; between second ray of R_3 and first ray of R_5 a faint short median streak from costa, and at center of apex of R_5 a similar streak which is almost always distinct; $2M_2$ with an anterior ray and a broader posterior one, between the former and posterior ray of R_5 a median triangular marginal spot. Pterostigma brownish in basal half, middle of colored portion with a minute hyaline spot. Median patch with many small hyaline dots irregularly placed; $1M_2$ with two rounded yellowish-brown callosities, the apical just below r-m and conspicuously large, transverse oblong and very prominent, the basal along base of Cu distinctly small and much less conspicuous; anterobasal corner of $2M_2$ with a similar small round spot; R_3 with two similar small but less elevated round spots along R_{4+5} in dark colored portion; R_5 with a very distinct large but not elevated round black spot just above m-cu, just above it an ill-defined yellowish-brown longitudinal spot along R_{4+5}; just inside r-m a smaller black spot. Halteres light reddish yellow, head whitish; squamulae light yellow.

Legs yellow, black pubescent, with a blackish-brown ring near the tip and the base of each femur and near base of each tibia, but in forelegs very faint and traceable only on external surface, the basal fermoral ring entirely obsolete, the basal ring in the four posterior femora incomplete. Foreleg (pl. 35, fig. 11) conspicuously shorter than others; femur comparatively thick, with two irregular rows of sparse thick white bristles, the apical four or six black and thinner dorsally, dorsal surface, with five white long conspicuous bristles, the two apical of which are black on externoventral margin; tibia slightly shorter than femur, pubescence longer on dorsal surface; tarsi distinctly 1.3 times as long as tibia, first segment longer than half the length of tibia, shorter than the four following segments together, bristle row on internoventral margin yellowish, black on externoventral margin. Midleg (pl. 35, fig. 12) not longer than hindleg; femur distinctly narrower than the other femora, very slightly longer than tibia, basal ring rather broad on externoventral surface, apical one-fourth of externoventral margin with somewhat distinct black bristly hairs; tibia as long as tarsus, apical spur yellowish with blackish tip, in addition three short yellowish bristles on external apex, basal ring rather faint; first tarsal segment longer than half the tibia, nearly as long as the four following segments together, bristle rows on ventral margins yellowish, not dense, short black spinelike bristles on under surface of second to fourth segments two or four. Hindleg (pl. 35, fig.13) very slightly longer than midleg, more or less thicker than latter; femur as long as tibia, distinctly narrowed toward each end, basal ring incomplete, ventral apex blackish, externoventral margin with a row of somewhat distinct black bristly hairs, distinctly sparser toward basal portion, internoventral margin with black bristly hairs in basal two-thirds; tibia slightly shorter than tarsus, slightly but distinctly curved outward, the rather bristly hairs in two rows on dorsal surface distinctly longer than the others; first tarsal segment nearly half as long as tibia, distinctly shorter than the four following segments together, internoventral margin with long yellowish rather sparse bristles, externoventral margin with black short setae, pubescence on dorsal surface rather long.

Length: Body 2.8–3.3 mm, wing 2.8–3.2 mm.

Female.—Similar to male. Sixth abdominal tergum (pl. 35, fig. 10) slightly shorter than preceding, strongly shining, nearly nontomentose, posterior margin with about three pairs of conspicuously long black bristles; basal segment of ovipositor shining yellow, base black, sparsely black pubescent, long and depressed, nearly as long as the four preceding abdominal terga together, with lateral margins sharp. Palpi less narrowed toward rounded apex.

Length: Body (without ovipositor) 3–3.2 mm, wing 3–3.3 mm.

Material examined.—Seven males and eight females from Okinawa Is., Mar. 27, Apr 23.

Distribution: Formosa; Okinawa Is.

Remarks.—The present specimens are almost always darker than those from Formosa.

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